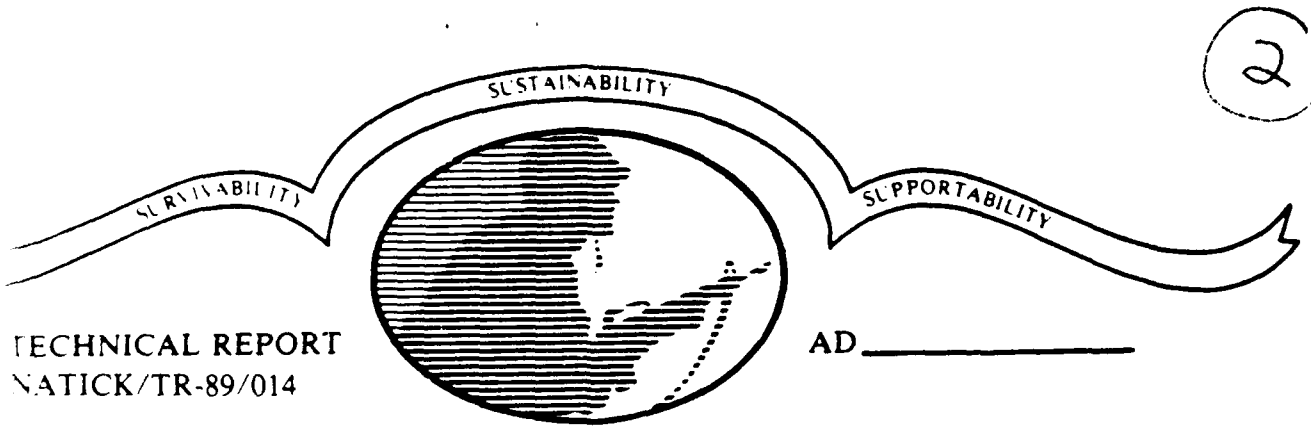

TECHNICAL REPORT
NATICK/TR-89/014

AD_____

FOOD MANAGEMENT PROGRAM FOR THE ADVANCED BASE

BY

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FINAL REPORT OCTOBER 1986 TO SEPTEMBER 1988

UNITED STATES ARMY NATICK
RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
NATICK, MASSACHUSETTS 01760-5000

ADVANCED SYSTEMS CONCEPTS DIRECTORATE

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This report documents the development of a food management program for the United States Air Force (USAF) Ballistic Missile Office (BMO) Advanced Base (pre-prototype underground habitat) test program. The objective was to design a food service system concept compatible with both peacetime and endurance operating modes. The food service system concept (14-day cycle) was designed to include frozen and nonfrozen prepared pre-portioned food products, selective (select one of two separate food items on the menu) and nonselective (select one of two separate meals) menus, flexible meal periods, and operation without food service personnel.

For the menu concept, food product selection included commercial frozen meals, frozen entrees, dry and canned items; prototype Thermostabilized Meal Tray (TMT) (microwave heating); and USAF F.E. Warren foil packs (prepared, frozen); and the Meal, Ready-To-Eat

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(MRE) as the emergency ration. Three separate tests of 4, 4, and 7 days duration were conducted to evaluate frozen vs. nonfrozen meals; selective vs. nonselective menus; ease of use of and ease of sanitizing kitchen equipment; time required to complete a meal; and kitchen problems encountered. In addition, trash weight and volume (compacted) and usage of electricity and water for food service were measured.

Statistical analysis of results indicated that three separate test crews, comprised of one team of four males and two teams of two females and two males, rated frozen food significantly higher for food quality and appearance. Selective menus were strongly preferred for frozen and nonfrozen meals. Food preparation and sanitation were rated as relatively easy when the Food Management Instruction Manual was followed. Posttest interviews on food service and behavioral issues were conducted. Food service positioning and preparation instructions were more than adequate. Flexible meal periods were well-received. The USAF produced F.E. Warren frozen foil pack (high acceptance) and the prototype TMT nonfrozen meals (medium acceptance) had adequate portion size while commercial frozen and nonfrozen products were insufficient in portion size. Numerous behavioral interpersonal conflict issues were resolved and noted; however, issues related to mixed gender privacy were not addressed until the posttest interviews. Recommendations include a longer test period to refine the selective menu concept, inventory management, and redesign storage facilities.

PREFACE

During FY87 the Systems Management and Logistics Branch, Systems Engineering Division, Food Engineering Directorate of the U.S. Army Natic' Research, Development and Engineering Center developed and tested a food service concept for feeding Air Force personnel enclosed in a self-contained and self-supporting underground base. Due to a reorganization at Natick, this project was completed by the Food Systems Division of the Advanced Systems Concepts Directorate. This study was conducted under Project 1L162724AH99 in the Department of Defense Food and Nutrition RDT&E Program.

Accomplishment of this project required the cooperative efforts of many individuals. Specifically, the authors would like to thank members of the following organizations:

U.S. Air Force Ballistic Missile Office, Norton AFB, CA

We would like to acknowledge CPT Elizabeth Williams, Project Manager, and Mr. Scott Johnson, TRW, Inc., Project Engineer (contracted) for their cooperation, concern, and responsiveness.

Hamilton Standard, United Technologies

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U.S. Army Natick Research, Development and Engineering Center

Principal participants from other Natick organizations that the project team would like to acknowledge include the following:

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Dr. Gerald Hertweck, Chief, Systems Engineering Division
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Mr. Frederick Costanza, Chief, Subsistence Protection Branch
CPT Arthur Hinton, Subsistence Protection Branch

Advanced Systems Concepts Directorate

Dr. D. Paul Leitch, Chief, Food Systems Division
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Ms. Lynn McClaskey, Food Systems Division

The authors also wish to acknowledge Mr. Lloyd Cox and Mr. Michael Statkus for critical review of this manuscript. Finally, special appreciation is extended to Ms. Maura Severance and Ms. Michelle Marchetti for providing excellent secretarial support.

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INTRODUCTION

Background

The Advanced Base was a proposal for underground habitats which, due to their depth and construction, would protect the personnel and facilities in the event of a missile attack. The overall objective of the Advanced Base research and development program, under direction of the USAF Ballistic Missile Office (BMO), was to accomplish the research and development necessary to reduce the development lead time should Advanced Basing be required to provide an Intercontinental Ballistic Missile (ICBM) secure reserve force in the late 1990s. The Advanced Base had two operating modes termed Peacetime and Endurance. In Peacetime, surface access allows movement of crew and materials to and from the Base. Power, heat rejection, and air supply are derived from surface equipment. During Endurance, all dependency on surface facilities is terminated and the crew is isolated and reliant solely on Base supplies and equipment.

Under contract to BMO, Hamilton Standard, a division of United Technologies, identified a non-regenerative life support system (LSS) as the most economical candidate for the Base support centers. The proposed LSS would be composed of habitat section, operational and egress control centers, air revitalization systems, water/waste management systems, food service systems, and personnel transport systems.

Hamilton Standard, through BMO and the DoD Food Program, obtained Natick RD&E Center support to develop a food service system for the Advanced Base pre-prototype test program. Support was needed in menu planning, food selection, preparation procedures, and kitchen equipment selection to satisfy both modes of operation. Technical and engineering support were also required for the Advanced Base pre-prototype under construction at Hamilton Standard facilities in Windsor Locks, CT.

There were three manned tests of 4, 4, and 7 days duration over the 3 months of pre-prototype operational testing. When uninhabitated, test engineers controlled and monitored the LSS on a daily basis. Man simulators were used to produce metabolic heat, carbon dioxide, and water vapor to allow testing of the LSS on a continuous 24-hour basis. The main objective of the pre-prototype test was to evaluate equipment considerations pertaining to LSS. The pre-prototype was expected to yield initial data on overall habitat operations and specific data relevant to crew reaction to the food and kitchen equipment. Based upon analysis of pre-prototype data, recommendations for an operational system were to be developed.

Technical Approach

Food System Design Consideration Provided by BMO. Development of the pre-prototype food service system was to focus on providing food services for a test crew size of four for a 15-day period. Alternative food and packaging opinions were to be reviewed and items were to be selected for the pre-prototype test. BMO requested that several issues be specifically addressed. These issues will be discussed later in this section. However, BMO requested that the following design concerns be considered in a systems approach:

Minimize Food Service Water Requirements
Minimize Food Preparation Requirements
Minimize Sanitation Requirements
Minimize Food Service Skill Requirement
Minimize Food Storage Volume
Minimize Food Service Equipment Requirements
Minimize Food Service Equipment Heat Generation

Statement of Work Requirements. BMO developed a statement of work that contained several distinct food service concerns that were to be addressed. Typically, the design of a total food service system begins with the identification and definition of requirements. Following this step, the development of the food service objectives and an appropriate strategic plan is completed. Based upon the plan, the developer usually will prepare a menu plan prior to the selection of food service facility features and equipment. However, in-depth Natick involvement in the Advanced Base project came after food service facilities and equipment had already been selected. Therefore, the approach to developing the pre-prototype food service system was modified accordingly. Specific information requested by BMO is listed below.

- Develop Menu Plan. Menu item recommendations for both Peacetime and Endurance operational modes were developed. A menu cycle and plan were developed. Nutritional and caloric information were analyzed for each food item selected for the menu.

- Determine Food Preparation Requirements. Food preparation/clean-up requirements were determined and an instruction manual was developed.

- Identify Food Packaging. Food packaging for all items selected was described.

- Define Shelf Life. Assessments of the shelf life for selected food stocks at the pre-prototype design temperature and after short temperature excursions were defined.

- Identify Emergency Rations. Recommendations were made for an emergency ration constituting a subsistence level of feeding in the event of habitat operations being disrupted with food service operations rendered inaccessible or inoperative.

- Assess Weight. The weight of all food on a per item basis where applicable was determined.

- Assess Volume. The volume of all food on a per item or package basis as appropriate was calculated. The volume at the beginning of the Endurance period by food storage type was determined.

- Analyze Costs. The cost of all food on a per item basis and at the beginning of an Endurance period was detailed. All costs were to be in FY87 dollars. Equipment and structural costs associated with the food service operation were to be provided by Hamilton Standard and included in the final report.

Data Collection. Both consumer-related and equipment information were collected. All test crew members were interviewed during pretest and posttest periods. Additionally, detailed questionnaires were completed by all test crew members during pretest and posttest periods. Equipment information pertaining to ease-of-use, utilities used, and human factor issues was also collected.

PRE-PROTOTYPE FOOD SERVICE SYSTEM DEVELOPMENT

Introduction

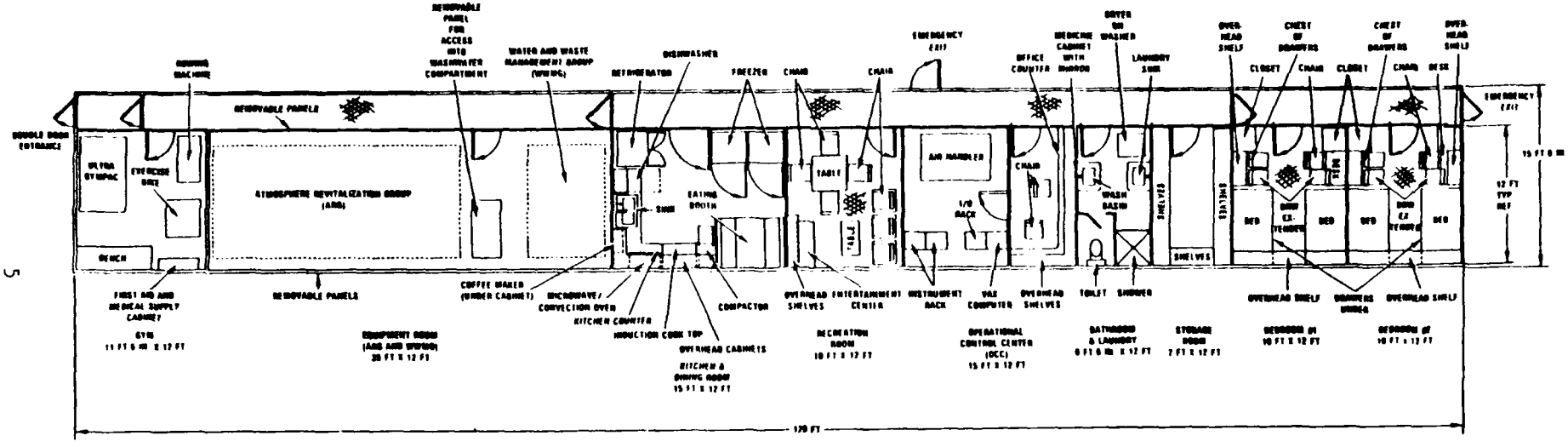
Natick's objective was to design, develop, and evaluate a food service system that would enable Air Force (AF) personnel to live and work in the Advanced Base. A pre-prototype operational test was used to gather data which could aid in the design and fabrication of an improved prototype habitat.

Pre-Prototype Facility. Figure 1 presents the layout for the pre-prototype facility as built by Hamilton Standard. This habitat contained all the work and life support facilities to support a four-member test crew under simulated Peacetime and Endurance operational conditions. The pre-prototype life support system (LSS) consisted of a habitat (living quarters) and functional support groups (electrical/mechanical equipment). The LSS was a fabricated steel structure approximately 16 feet wide x 120 feet long x 12 feet high. The habitat depicted in Figure 1 contained the following: two bedrooms, each with two single beds; a kitchen/eating area; a gym; a recreation area; a control room; a bathroom/laundry area; a storage area; and an equipment room. The support equipment groups within the LSS included Atmosphere Revitalization Group (ARG), Water and Waste Management Group (WWMG), LSS Monitor and Control System (M&C), and the Food Management Group (FMG). For a more detailed description of the LSS and its support groups refer to Hamilton Standard document GSER 1266, General Test Plan/Procedure for Advanced Base LSS.

An estimated construction cost of about $29,700 ($165 per sq. ft.) for the kitchen was provided by Hamilton Standard. Table 1 provides a list of equipment and utensil actual costs. Appendix A contains detailed lists of items recommended for use in the kitchen. Costs presented in Appendix A will vary from Table 1 due to small quantity purchases.

Food Service System

System Design. The original objective was to design and evaluate food service systems for both Peacetime and Endurance modes of operation. As indicated in the Introduction, BMO requested that storage volume and personnel skill requirements be minimized. Therefore, a decision was made to maximize the compatibility of the two modes of operation rather than to design two distinct food service systems. Similar systems would eliminate the need for separate equipment, food storage areas, and food products.



NOTES
1) INTERNAL HEIGHT OF DOMES = 7'3"
2) 4% REPRESENTS CARPETED AREAS
3) OVERALL DIMENSIONS 15 0 WIDE x 120' LONG x 12' HIGH

Figure 1. Pre-Prototype Habitat - Hamilton Standard.

TABLE 1. Equipment and Utensil Costs.

ITEM	COST
Upright Freezer	$600
Refrigerator	995
Induction Cooktop	960
Trash Compactor	290
Microwave/Convection Oven	650
In-Sink Disposal	125
Automatic Dishwasher	700
Toaster	85
Utensils	175
Pots and Pans	200
Serviceware	250
Housekeeping Supplies	100
Total	$5130

Several key considerations governed the design of the system. First, crew members untrained in food service should be capable of operating the system. In both modes of operation, only a few AF personnel would be assigned to monitor launch control facilities and none of these would be dedicated to food service. Second, flexibility in crew meal periods was desired. Planners envisioned that each crew member would have a different work schedule which might make it inconvenient or even impossible for the entire crew to eat during a designated period of time. Also, crew members on the same shift would not eat together as one member always manned the control monitor, Third, ease of preparation and sanitation were crucial elements of the system. Therefore, a decision was made to utilize prepared, pre-portioned food items which are easy to use and reduce water requirements. Maximizing use of individual items minimizes preparation and sanitation concerns, whereas bulk preparation requires trained food service personnel and various specialized holding equipment. In addition, bulk preparation has the potential for a significant amount of leftovers for low acceptance items or when diner schedule conflicts occur. From the guidelines presented and the above discussion, the following considerations guided menu planning and cycle formulation:

- No personnel would be dedicated to food service.
- Meal periods would be flexible.
- Prepared, pre-portioned individual food products would be used in lieu of large quantity food preparation.
- High preference menu items would be utilized.
- Menu variety would be maintained.
- Air Force Regulation 160-95, Nutritional Standards would be maintained.

Food Products Selected. The menu developed would be composed of a mixture of the following items: a) Thermostabilized Meal Tray (TMT) components, which are shelf stable, single-service size prepared foods packaged in microwaveable containers; b) F.E. Warren Foilpacks, which are precooked, frozen, single-serve entrees, starches, vegetables, and desserts packaged in aluminum foil trays with crimped-on cardboard lids; c) commercial frozen items; d) miscellaneous nonfrozen items; e) bread; f) beverages; and g) condiments.

The Meal, Ready-to-Eat (MRE) was the emergency ration to be used in the event that food service facilities were rendered inaccessible or inoperative. The MRE is used by all military services and was designed for issue to individuals when operational conditions preclude other means of subsistence. Each of the 12 MRE menus provides an average of 1215 calories. The components can be eaten as is or can be heated in water by means of fuel tablets.

Product Information. Table 2 was created to provide the following individual food product information requested by BMO:

- PRODUCT COST estimated in 1987 dollars;
- PRODUCT WEIGHT in grams;
- PACKAGING WEIGHT in grams;
- PACKAGING MATERIAL, i.e., the percentage of paper, plastic, steel, aluminum, or other material included in the packaging is indicated;
- PRODUCT VOLUME in cubic inches; and
- SHELF LIFE. All frozen menu items have a 6-month shelf life at 32°F. Storage temperatures above 32°F would cause the frozen foods to spoil. Nonfrozen menu items differ in their shelf stability. TMT and MRE components as well as most commercial canned products are shelf stable for periods greater than 6 months at design temperatures and after brief temperature excursions. Commercial products, such as the doughnuts, snack cakes, cookies, and granola bars, have a limited shelf life. In an Endurance mode of operation, these items would be replaced by MRE cakes, cookies, and granola bars.

Note that costs, weights, and volumes are most often provided on a per item basis. This information is given on a per package basis for certain products such as cereals, ice creams, juices, and snack cakes.

Menu Concept Development. A 14-day menu cycle was designed for pre-prototype operational planning and testing of various menu concepts. From the results obtained from this testing, a menu compatible with the parameters of the Advanced Base could be refined for future testing. The menu developed is presented in Table 3. Based on nutritional guidance in AR 40-25, nutritional analysis of this menu is in Appendix B.

TABLE 2. Food Product Information.

ITEM	TYPE	COST	PROD WT (G)	PKG WT (G)	<---- PACKAGING MATERIAL ----> PAPER %	PLASTIC %	STEEL %	ALUM %	OTHER %	VOL (CU IN)
APPLE DESSERT	TMT*	$5.00	227	14	0	99	0	1	0	27
APPLESAUCE (6 PACK)	COMMERCIAL	$1.59	681	69	47	52	0	7	0	78
BEANS, BAKED, CANNED	COMMERCIAL	$0.34	227	41	1	0	99	0	0	36
BEANS, GREEN	FOILPACK	$0.10	145	12	36	0	0	64	0	19
BEANS, GREEN, CANNED	COMMERCIAL	$0.40	170	43	1	0	99	0	0	36
BEANS, WAX, CANNED	COMMERCIAL	$0.40	170	43	1	0	99	0	0	36
BEEF CASSEROLE	COMMERCIAL	$1.59	235	54	51	49	0	0	0	59
BEEF PEPPER STEAK	TMT*	$8.00	326	20	0	99	0	1	0	40
BEEF PEPPER STEAK W/RICE	COMMERCIAL	$1.59	284	31	100	0	0	0	0	30
BEEF SHORT RIBS W/POTATO, VEG	COMMERCIAL	$3.99	298	154	28	70	0	2	0	104
BEEF STEW	TMT*	$8.00	326	20	0	99	0	1	0	40
BEEF TIPS W/BBQ SAUCE	FOILPACK	$0.80	227	18	29	0	0	71	0	30
BEEF, CREAMED GROUND	TMT*	$5.00	227	14	0	99	0	1	0	27
BEEF, ROAST	FOILPACK	$0.95	227	18	29	0	0	71	0	30
BEEF, SZECHUAN W/VEG & NOODLES	COMMERCIAL	$2.69	346	30	64	36	0	0	0	34
BEEFSTEAK/EGG/CHEESE ON ENG MUF	COMMERCIAL	$1.59	147	24	100	0	0	0	0	36
BREAD, FROZEN	COMMERCIAL	$0.85	454	7	0	100	0	0	0	
BROWNIE, FUDGE NUT, (8/PKG)	COMMERCIAL	$1.29	300		0	0	0	0	0	
BURRITO, BEEF & BEAN	COMMERCIAL	$0.59	142	2	0	100	0	0	0	20
CAKE, CHOCOLATE W/FROSTING	FOILPACK	$0.10	75	12	36	0	0	64	0	19
CAKE, CRUMB	COMMERCIAL	$1.99	384	40	88	12	0	0	0	129
CAKE, WHITE	FOILPACK	$0.05	75	12	36	0	0	64	0	19
CAKE, YELLOW W/FROSTING	FOILPACK	$0.10	75	12	36	0	0	64	0	19
CARROTS, CANNED	COMMERCIAL	$0.40	170	43	1	0	99	0	0	36
CEREAL, COLD, VARIETY (6 PACK)	COMMERCIAL	$1.29	168	130	99	1	0	0	0	148
CEREAL, CREAM OF WHEAT (12 PACK)	COMMERCIAL	$1.89	340	60	100	0	0	0	0	89
CEREAL, OATMEAL, VARIETY (10 PACK)	COMMERCIAL	$1.79	390	58	100	0	0	0	0	117
CHICKEN CASSEROLE	COMMERCIAL	$1.59	235	54	51	49	0	0	0	59
CHICKEN STEW	TMT*	$8.00	326	20	0	99	0	1	0	40
CHICKEN A LA KING	TMT*	$8.00	326	20	0	99	0	1	0	40
CHICKEN, FRIED	FOILPACK	$1.10	113	18	29	0	0	71	0	30
CHICKEN, FRIED W/POTATO, CORN, DES	COMMERCIAL	$1.99	319	71	51	49	0	0	0	64
CHILI CON CARNE	TMT*	$8.00	326	20	0	99	0	1	0	40
COCOA BEVERAGE POWDER	MRE	$0.08	43	3	0	0	0	100	0	
COOKIE BAR, FIG, INDIVIDUAL	COMMERCIAL	$0.20	58		0	100	0	0	0	
COOKIE BAR, DUTCH APPLE (8 PACK)	COMMERCIAL	$1.29	340							
COOKIE, PEANUT BUTTER, CHOC COV (12)	COMMERCIAL	$1.79	303	129	25	0	0	75	0	64
CORN	FOILPACK	$0.10	145	12	36	0	0	64	0	19
COTTAGE CHEESE (50 SERVINGS)	COMMERCIAL	$8.49	2850		1	0	99	0	0	
CRANBERRY SAUCE, CANNED	COMMERCIAL	$0.45	139	38	1	0	99	0	0	33
DOUGHNUTS, POWDERED, BITE SIZE	COMMERCIAL	$0.59	57	5	43	57	0	0	0	22
EGG OMELET HOT POCKET (2 PACK)	COMMERCIAL	$2.59	284	35	99	1	0	0	0	58
EGG, CAN BACON & CHEESE ON ENG MUF	COMMERCIAL	$1.49	147	26	100	0	0	0	0	36
EGGS, SCRAMBLED W/SAUS, HASH BROWNS	COMMERCIAL	$0.99	177	42	99	1	0	0	0	51

TABLE 2. Food Product Information (cont'd).

ITEM	TYPE	COST	PROD WT (G)	PKG WT (G)	<---- PACKAGING MATERIAL ----> PAPER %	PLASTIC %	STEEL %	ALUM %	OTHER %	VOL (CU IN)
ENCHILADAS, BEEF W/RICE & BEANS	COMMERCIAL	$3.89	368	164	36	63	0	1	0	134
ESKIMO PIE (6 PACK)	COMMERCIAL	$1.79	510	65	33	10	0	57	0	91
FISH, FRIED	FOILPACK	$0.35	113	18	29	0	0	71	0	30
FRANKS	TMT*	$8.00	91	20	0	99	0	1	0	40
FRENCH TOAST (6 SLICES)	COMMERCIAL	$1.09	258	29	99	1	0	0	0	69
FRENCH TOAST W/SAUSAGE	COMMERCIAL	$1.09	184	43	99	1	0	0	0	51
FRUIT & JUICE BARS (4 PACK)	COMMERCIAL	$1.79	284	48	84	0	0	0	16	64
FRUIT MIX	TMT*	$5.00	227	14	0	99	0	1	0	17
GRANOLA BAR, CHOCOLATE CHIP (8 PACK)	COMMERCIAL	$1.89	224	37	69	0	0	31	0	56
GRAPEFRUIT SECTIONS, CANNED		$0.79	227	76	1	0	99	0	0	71
HAM SLICES	TMT*	$8.00	136	20	0	99	0	1	0	40
HAM, DICED W/POTATOES	TMT*	$8.00	326	20	0	99	0	1	0	40
HAMBURGERS ON SESAME ROLLS (2)	COMMERCIAL	$1.49	245	28	99	1	0	0	0	98
ICE CREAM SANDWICH (8 PACK)	COMMERCIAL	$1.89	568	48	100	0	0	0	0	89
ICE CREAM SUNDAE CUPS (12 PACK)	COMMERCIAL	$2.19	1020	91	34	66	0	0	0	23
ITALIANO HOT POCKET (2 PACK)	COMMERCIAL	$2.59	284	35	99	1	0	0	0	58
JUICE, ORANGE, BOX (3 PACK)	COMMERCIAL	$1.35	750	33	99	1	0	0	0	51
JUICE, ORANGE, CANNED (6 PACK)		$1.68		36	0	0	100	0	0	29
JUICE, ORANGE, INSTANT	COMMERCIAL	$1.92		294	491	4	0	0	95	100
JUICE, PINEAPPLE, BOX (3 PACK)	COMMERCIAL	$1.08	750	39	99	1	0	0	0	52
JUICE, PINK GRAPEFRUIT, BOX (3 PACK)	COMMERCIAL	$0.89	750	36	99	1	0	0	0	51
LASAGNA, THREE CHEESE	COMMERCIAL	$1.59	284	31	100	0	0	0	0	30
MILK, UHT (27)	COMMERCIAL	$10.00								
OMELET, BACON	TMT*	$8.00	326	20	0	99	0	1	0	40
PANCAKES & SAUSAGE	COMMERCIAL	$0.99	170	39	99	1	0	0	0	51
PANCAKES (8)	COMMERCIAL	$1.29	304	34	99	1	0	0	0	86
PEACHES	TMT*	$5.00	227	14	0	99	0	1	0	27
PEARS	TMT*	$5.00	227	14	0	99	0	1	0	27
PEAS	FOILPACK	$0.05	145	12	36	0	0	64	0	19
PEAS, CANNED	COMMERCIAL	$0.40	170	43	1	0	99	0	0	36
PIE, APPLE	FOILPACK	$0.10	142	12	36	0	0	64	0	19
PIE, PEACH	FOILPACK	$0.15	142	12	36	0	0	64	0	19
PIZZA, CHEESE	COMMERCIAL	$0.99	184	40	99	1	0	0	0	72
POP TARTS (6)	COMMERCIAL	$1.08	312	28	99	0	0	1	0	55
PORK W/BBQ SAUCE	TMT*	$8.00	326	20	0	99	0	1	0	40
POTATOES, AU GRATIN	TMT*	$5.00	227	14	0	99	0	1	0	27
POTATOES, AU GRATIN	FOILPACK	$0.15	142	12	36	0	0	64	0	19
POTATOES, INSTANT, MASHED	COMMERCIAL	$1.45	454	70	100	0	0	0	0	125
POTATOES, MASHED	FOILPACK	$0.05	156	12	36	0	0	64	0	19
POTATOES, TATER TOTS	COMMERCIAL	$0.50	114	19	100	0	0	0	0	30
PUDDING POPS (12 PACK)	COMMERCIAL	$2.59	600	103	77	0	0	0	23	127
PUDDING, BUTTERSCOTCH (4 PACK)	COMMERCIAL	$1.39	484	47	35	59	0	6	0	9
PUDDING, CHOCOLATE	TMT*	$5.00	227	14	0	99	0	1	0	27
RICE, BOIL-IN-BAG	COMMERCIAL	$1.29	908	55	82	18	0	0	0	95

TABLE 2. Food Product Information (cont'd).

ITEM	TYPE	COST	PROD WT (G)	PKG WT (G)	<---- PACKAGING MATERIAL ----> PAPER %	PLASTIC %	STEEL %	ALUM %	OTHER %	VOL (CU IN)
RICE, BUTTERED	FOILPACK	$0.05	113	12	36	0	0	64	0	19
SALISBURY STEAK W/POTATO, CORN, DES	COMMERCIAL	$1.79	305	71	51	49	0	0	0	64
SAUSAGE (10 PACK)	COMMERCIAL	$1.59	285	18	100	0	0	0	0	34
SCALLOPS & SHRIMP MARINER W/RICE	COMMERCIAL	$3.99	291	31	100	0	0	0	0	30
SOLE IN WINE SAUCE W/FETTUCINE & VEG	COMMERCIAL	$3.49	340	59	55	45	0	0	0	70
SPAGHETTI W/MEAT SAUCE	TMT*	$8.00	326	20	0	99	0	1	0	40
SPAGHETTI W/MEAT SAUCE	FOILPACK	$0.35	425	18	29	0	0	71	0	30
THREE BEAN SALAD	COMMERCIAL	$0.89	170	205	1	0	5	0	94	77
TUNA W/NOODLES	TMT*	$8.00	326	20	0	99	0	1	0	40
TURKEY W/POTATO, PEAS, DESSERT	COMMERCIAL	$1.59	326	71	51	49	0	0	0	64
TURKEY, ROAST W/GRAVY	FOILPACK	$0.90	255	18	29	0	0	71	0	30
VEAL PARMESAN W/FETTUCINE, VEG & DES	COMMERCIAL	$1.79	348	71	51	49	0	0	0	64
VEGETABLES, MIXED	FOILPACK	$0.10	145	12	36	0	0	64	0	19
VEGETABLES, MIXED, CANNED	VEG-ALL	$0.40	145	43	1	0	99	0	0	36

*Estimated cost of initial Thermostabilized Meal Tray (TMT) prototype; full scale production cost will be considerably lower.

TABLE 3. Advanced Base Menu.

Day 1

Breakfast: Nonfrozen

Peaches (TMT)
Hot Oatmeal (instant)
Omelet (TMT)
Powdered Doughnuts
Butter
Beverages*

OR

Orange Juice (cn)
Cold Cereal (dry)
Creamed Ground Beef (TMT)
Bread
Butter
Beverages*

Lunch: Frozen

Pizza, Cheese
Beef and Bean Burrito
Pudding Pop
Eskimo Pie
Beverages*

Dinner: Nonfrozen

Tuna/Noodles (TMT)
Beef Pepper Steak (TMT)
Mashed Potato (instant)
Peas (cn)
Carrots (cn)
Iced Dutch Apple Cookie Bar
Butterscotch Pudding
Bread
Butter
Beverages*

Day 2

Breakfast: Frozen

Pineapple Juice (aseptic)
Hot Oatmeal (instant)
Egg Omelet Hot Pocket
Butter
Beverages*

OR

Grapefruit Juice (aseptic)
Cold Cereal (dry)
French Toast w/Sausage
Butter
Beverages*

Lunch: Nonfrozen

Beef Stew (TMT)
Chicken Stew (TMT)
Carrots (cn)
Wax Beans (cn)
Pears (TMT)
Chocolate Pudding (TMT)
Bread
Butter
Beverages*

Dinner: Nonfrozen

BBQ Pork (TMT)
Rice (dry)
Applesauce
Fig Bar
Bread
Butter
Beverages*

OR

Spaghetti (TMT)
Green Beans (cn)
Peaches (TMT)
Granola Bar, Chocolate Chip
Bread
Butter
Beverages*

TABLE 3. Advanced Base Menu (cont'd).

Day 3

Breakfast: Frozen

Grapefruit Juice (aseptic)
Hot Oatmeal (instant)
Scrambled Eggs w/Sausage
w/Hash Browns
Bread
Butter
Beverages*

OR

Orange Juice (aseptic)
Cold Cereal (dry)
Eggs/Canadian Bacon/Cheese
on English Muffin
Shredded Potato
Butter
Beverages*

Lunch: Frozen

Fried Fish (F.E. Warren)
3-Cheese Lasagna
Mashed Potato (F.E. Warren)
Green Beans (F.E. Warren)
Mixed Vegetables (F.E. Warren)
Apple Pie (F.E. Warren)
Chocolate Cake (F.E. Warren)
Bread
Butter
Beverages*

Dinner: Frozen

Salisbury Steak w/Potato
w/Vegetable
w/Dessert
Bread
Butter
Beverages*

OR

Scallops & Shrimp Marinara w/Rice
Corn (F.E. Warren)
Ice Cream Sandwich
Bread
Butter
Beverages*

Day 4

Breakfast: Nonfrozen

Orange Juice (instant)
Peaches (TMT)
Hot Oatmeal (instant)
Cold Cereal (dry)
Omelet (TMT)
Creamed Ground Beef (TMT)
Powdered Doughnuts
Bread
Butter
Beverages*

Lunch: Frozen

Italian Hot Pocket
Hamburgers on Sesame Seed Rolls
Fruit and Juice Bar
Ice Cream Sundae Cup
Beverages*

Dinner: Nonfrozen

Diced Ham w/Scalloped Potato (TMT)
Carrots (cn)
Pears (TMT)
Chocolate Peanut Butter Cookie
Bread
Butter
Beverages*

OR

Beef Stew (TMT)
Wax Beans (cn)
Chocolate Pudding (TMT)
Bread
Butter
Beverages*

TABLE 3. Advanced Base Menu (cont'd).

Day 5

Breakfast: Frozen

Pineapple Juice (aseptic)
Grapefruit Juice (aseptic)
Cold Cereal (dry)
Hot Oatmeal (instant)
French Toast
Egg Omelet Hot Pocket
Sausage
Butter
Beverages*

Lunch: Frozen

Pizza, Cheese
Pudding Pop
Beverages*

OR

Beef and Bean Burrito
Eskimo Pie
Beverages*

Dinner: Nonfrozen

Chili Con Carne (TMT)
Rice (dry)
Mixed Vegetables (cn)
Fruit Mix (TMT)
Bread
Butter
Beverages*

OR

Chicken A La King (TMT)
Rice (dry)
Peas (cn)
Butterscotch Pudding
Bread
Butter
Beverages*

Day 6

Breakfast: Nonfrozen

Orange Juice (aseptic)
Pears (TMT)
Hot Cream of Wheat (instant)
Bacon Omelet (TMT)
Creamed Ground Beef (TMT)
Pop Tart
Bread
Butter
Beverages*

Lunch: Nonfrozen

Franks (TMT)
Baked Beans (cn)
Peaches (TMT)
Bread
Butter
Beverages*

OR

Ham Sandwich (TMT/Bread)
3-Bean Salad
Apple Dessert (TMT)
Butter
Beverages*

Dinner: Frozen

Roast Beef (F.E. Warren)
Scallops & Shrimp Marinara w/Rice
Mashed Potato (F.E. Warren)
Peas (F.E. Warren)
Corn (F.E. Warren)
Yellow Cake (F.E. Warren)
Ice Cream Sandwich
Bread
Butter
Beverages*

TABLE 3. Advanced Base Menu (cont'd).

Day 7	Day 8
Breakfast: Nonfrozen	**Breakfast**: Nonfrozen
Grapefruit Sections (cn) Orange Juice (instant) Cold Cereal (dry) Hot Oatmeal (instant) Bacon Omelet (TMT) Creamed Ground Beef (TMT) Coffee Cake Bread Butter Beverages*	Pears (TMT) Bacon Omelet (TMT) Pop Tart Beverages* OR Orange Juice (cn) Hot Cream of Wheat (instant) Creamed Ground Beef (TMT) Bread Butter Beverages*
Lunch: Frozen	**Lunch**: Frozen
Sole w/Wine Sauce/ Fettucini/Broccoli Pudding Pop Bread Butter Beverages* OR 3-Cheese Lasagna Mixed Vegetables (F.E. Warren) White Cake (F.E. Warren) Bread Butter Beverages*	Hamburgers on Sesame Seed Rolls Fruit and Juice Bar Beverages* OR Italian Hot Pocket Ice Cream Sundae Cup Beverages*
Dinner: Nonfrozen	**Dinner**: Frozen
Tuna/Noodle Casserole (TMT) Beef Pepper Steak (TMT) Mashed Potato (instant) Peas (cn) Carrots (cn) Butterscotch Pudding Chocolate Peanut Butter Cookie Bread Butter Beverages*	Chicken Casserole BBQ Beef Tips (F.E. Warren) Spaghetti/Meat Sauce (F.E. Warren) Au Gratin Potato (F.E. Warren) Green Beans (F.E. Warren) Mixed Vegetables (F.E. Warren) Apple Pie (F.E. Warren) Chocolate Cake (F.E. Warren) Bread Butter Beverages*

TABLE 3. Advanced Base Menu (cont'd).

Day 9

Breakfast: Frozen

Orange Juice (aseptic)
Cold Cereal (dry)
Pancakes w/Sausage
Butter
Beverages*

OR

Pineapple Juice (aseptic)
Steak/Egg/Cheese on English Muffin
Beverages*

Lunch: Nonfrozen

Chicken Stew (TMT)
Cranberry Sauce (cn)
Ham Slices (TMT)
Rice (dry)
Potato au Gratin (TMT)
Green Beans (cn)
Carrots (cn)
Applesauce
Fig Bar
Bread
Butter
Beverages*

Dinner: Frozen

Turkey (F.E. Warren)
Roast Beef (F.E. Warren)
Mashed Potato (F.E. Warren)
Rice (F.E. Warren)
Corn (F.E. Warren)
Mixed Vegetables (F.E. Warren)
Eskimo Pie
White Cake (F.E. Warren)
Bread
Butter
Beverages*

Day 10

Breakfast: Nonfrozen

Pears (TMT)
Bacon Omelet (TMT)
Coffee Cake
Butter
Beverages*

OR

Orange Juice (instant)
Cold Cereal (dry)
Creamed Ground Beef (TMT)
Bread
Butter
Beverages*

Lunch: Frozen

Beef Casserole
Fried Chicken (F.E. Warren)
Mashed Potato (F.E. Warren)
Corn (F.E. Warren)
Peach Pie (F.E. Warren)
Yellow Cake (F.E. Warren)
Bread
Butter
Beverges*

Dinner: Frozen

Veal Parmesan w/Fettucini Alfredo
w/Green Beans
w/Apple Crumb Dessert
Bread
Butter
Beverages*

OR

Beef Short Ribs w/Potato
w/Vegetable
Ice Cream Sandwich
Bread
Butter
Beverages*

TABLE 3. Advanced Base Menu (cont'd).

Day 11	Day 12
Breakfast: Nonfrozen	**Breakfast**: Frozen
Grapefruit Sections (cn) Bacon Omelet (TMT) Pop Tart Beverages* OR Orange Juice (cn) Creamed Ground Beef (TMT) Bread Butter Beverages*	Orange Juice (aseptic) Grapefruit Juice (aseptic) Scrambled Egg Egg/Canadian Bacon/Cheese on English Muffin Sausage Bread Butter Beverages*
Lunch: Nonfrozen	**Lunch**: Nonfrozen
Franks (TMT) Ham Sandwich (TMT/cn bread) Baked Beans (cn) Peaches (TMT) Fruit Mix (TMT) Apple Dessert (TMT) Fudge Nut Brownnie Bread Butter Beverages*	Chili Con Carne (TMT) Chicken a La King Rice (dry) Peas (cn) Butterscotch Pudding Fruit Mix (TMT) Bread Butter Beverages*
Dinner: Nonfrozen	**Dinner**: Frozen
Tuna/Noodle Casserole (TMT) Peas (cn) Pears (TMT) Bread Butter Beverages* OR Beef Pepper Steak (TMT) Mashed Potato (instant) Carrots (cn) Dutch Apple Cookie Bar Bread Butter Beverages*	Pepper Steak w/Rice Corn (F.E. Warren) Chocolate Cake (F.E. Warren) Bread Butter Beverages* OR Beef Enchiladas w/Refried Beans w/Mexican Vegetables Ice Cream Sundae Cup Bread Butter Beverages*

TABLE 3. Advanced Base Menu (cont'd).

Day 13

Breakfast: Nonfrozen

Pears (TMT)
Orange Juice (instant)
Bacon Omelet (TMT)
Creamed Ground Beef (TMT)
Pop Tart
Bread
Butter
Beverages*

Lunch: Nonfrozen

Chicken Stew (TMT)
Cranberry Sauce (cn)
Rice (dry)
Green Beans (cn)
Chocolate Pudding (TMT)
Bread
Butter
Beverages*

OR

Ham Slices (TMT)
Mashed Potato (instant)
Carrots (cn)
Applesauce
Fig Bar
Bread
Butter
Beverages*

Dinner: Frozen

Turkey w/Dressing
w/Mashed Potato
w/Peas
w/Fruit Dessert
Bread
Butter
Beverages*

OR

Szechuan Beef w/Oriental Noodles
w/Oriental Vegetables
White Cake (F.E. Warren)
Bread
Butter
Beverages*

Day 14

Breakfast: Frozen

Orange Juice (cn)
Pineapple Juice (aseptic)
Steak/Egg/Cheese on English Muffin
Sausage
Pancakes
Butter
Beverages*

Lunch: Frozen

Beef Casserole
Fruit and Juice Bar
Bread
Butter
Beverages*

OR

Fried Chicken w/Potato
w/Vegetable
w/Dessert
Bread
Butter
Beverages*

Dinner: Nonfrozen

Peach & Cottage Cheese Salad (TMT)
BBQ Pork (TMT)
Spaghetti w/Meat Sauce (TMT)
Rice (dry)
Applesauce
Green Beans (cn)
Chocolate Peanut Butter Cookie
Granola Bar, Chocolate Chip
Bread
Butter
Beverages*

TABLE 3. Advanced Base Menu (cont'd).

*BEVERAGES

Breakfast Meal:	Hot Cocoa Milk, UHT (Ultra High Temperature Processing) Coffee or Tea
Lunch/Dinner Meals:	Milk, UHT Coffee, Tea, or Soda

Maximum compatibility between the Peacetime and Endurance operational modes was a consideration in menu development. However, for purposes of the pre-prototype operational test, the Endurance mode was the focal point of analyses as it would place more stringent self-sufficiency requirements on the food service system. During Peacetime operations, access to outside sources of food and beverages is not a problem. The menu developed is totally compatible with Peacetime operations through simple augmentation of fresh items such as fruits and salads.

In the course of devising a food service system concept that utilizes individual prepared, pre-portioned products several questions arose. For example, How should a crew member select a meal? How are the quantities of required products established? What should be the mix of frozen and nonfrozen items?

To answer these types of questions a test was developed. Two types of food products, frozen and nonfrozen, were evaluated. Frozen items are self-explanatory. However, for purposes of this evaluation the term nonfrozen referred to a wide variety of items that differed in their shelf stability characteristics. In addition, two meal selection procedures were also evaluated. Selective menus offered the test crew a choice of individual meal components. Nonselective menus offered a choice of one of two complete meals. Table 4 details the difference in the selective and nonselective factor using frozen foods as an example.

Food Preparation/Sanitation. Guides detailing food preparation procedures and time requirements were written for each meal included in the 14-day menu. These guides were part of the Food Management Group (FMG) instruction manual provided to each test crew member. The manual also contained information on general food management policies and operational guidelines, menu selection procedures, positioning instructions, and a test crew work schedule. Examples of the FMG manual contents can be found in Appendix C.

Appendix D contains excerpts from the detailed sanitation procedures which were also described in the FMG manual. Kitchen equipment instructions referred to in these sanitation procedures are not included in this Appendix.

TABLE 4. Comparison of a Frozen Selective Meal vs. a Frozen Nonselective Meal.

DAY 9 DINNER FROZEN SELECTIVE	DAY 13 DINNER FROZEN NONSELECTIVE
SELECT 1:	SELECT 1 MEAL:
TURKEY SLICES ROAST BEEF	TURKEY DINNER W/DRESSING W/MASHED POTATOES W/PEAS W/FRUIT DESSERT
SELECT 1: MASHED POTATOES RICE	BREAD BUTTER BEVERAGES*
SELECT 1: CORN MIXED VEGETABLES	
SELECT 1: ESKIMO PIE WHITE CAKE	SZECHUAN BEEF DINNER W/ORIENTAL NOODLES W/ORIENTAL VEGETABLES WHITE CAKE
AS DESIRED: BREAD BUTTER BEVERAGES*	BREAD BUTTER BEVERAGES*

* COFFEE, TEA, JUICE, MILK AND SODA

Note that a comparison of a frozen selective meal and a frozen nonselective meal is listed above. On day 9 the test crew member would choose one entree, one starch, one vegetable, and one dessert from the list. On day 13, rather than choosing individual meal components, the test crew member would choose a complete beef or a complete turkey dinner.

TEST METHODOLOGY

Introduction

The pre-prototype evaluation offered an opportunity to obtain valuable information that would allow for development of a food service system for the Advanced Base concept as well as other analagous situations. The discussion presented in this section will detail characteristics of the test design as well as pertinent information concerning the test.

Three manned test periods were conducted. For purposes of food service operations, all three test periods were considered to be Endurance operations. Test crew members were buttoned-up within the habitat with no outside source of food.

Procedure

All 10 test crew members were briefed well in advance of the tests on the food service data collection procedures. Procedures for food preparation and clean-up were explained in detail during this briefing. Most of the information presented below was obtained from questionnaires which crew members completed prior to, during, and following each habitat test. Examples of each of these questionnaires appear in Appendix E. The schedule for completion of the questionnaires was described to the crew members and the importance of candid and complete responses was emphasized.

Immediately following the initial briefing the crew members completed the pretest questionnaire. The questionnaire collected demographic information about the crew members, including prior experience in habitat-like environments and their normal meal patterns and food preferences. During or immediately following each meal, each crew member filled out a questionnaire which requested information about how well they liked the food, the human factors of meal preparation and clean-up, and use of kitchen equipment. The final (posttest) questionnaire was administered immediately after each test was completed, and for two of the tests the final questionnaires were completed inside the habitat. This questionnaire assessed the crew members' overall experiences in, and opinions about, the Advanced Base Habitat.

The final phase of data collection was not confined to food service issues. Immediately following completion of the final questionnaire the test crew members were interviewed, as a group, for about 1 hour. Two behavioral scientists from Natick conducted these interviews in a closed room with no spectators. Questions and actual or potential problems were raised for discussion by the group. Topics for discussion ranged from difficulty sleeping and the human factors of the sleeping quarters to problems related to males and females sharing kitchen and bathroom facilities. The nonfood service issues were detailed in technical report NATICK/TR-88/063.[2]

Manned tests were conducted during the following periods:

3-6 August 1987, test crew 1 comprised of 4 males;
24-27 August 1987, test crew 2 comprised of 2 males and 2 females; and
21-27 September 1987, test crew 3 comprised of 2 males and 2 females.

Test Crew Demographics. There were 10 test crew members in all and each test crew consisted of four members. The team leader was the same individual for all tests; however, the other crew members were different for each test. Of the 10 crew members, 4 were female and 6 were male. Six test subjects were married and the others were single. Only two had served in the military. Ages ranged from 25 to 44 with the average age being 29 (see Table 5).

TABLE 5. Test Crew Summary.

Sex/Number		Age Range	Age Mean	Weight (lbs) Range	Weight (lbs) Mean	Height (in) Range	Height (in) Mean
Male	6	25-44	30	155-196	169	67-74	70
Female	4	25-33	27	110-136	125	62-68	65

Test Design. To determine a concept for food service operations for enclosed environments as well as to develop a method for proposing an appropriate mix of food products for the Advanced Base concept, the following test plan was designed:

Food Type: Frozen vs. Nonfrozen
Factors: Selective vs. Fixed (Nonselective)

A. Nonfrozen Fixed Meal
B. Nonfrozen Selective Components
C. Frozen Fixed Meal
D. Frozen Selective Components

	DAY														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MEAL															
Breakfast	A	C	C	B	D	B	B	A	C	A	A	D	B	D	A
Lunch	D	B	D	D	C	A	C	C	B	D	B	B	A	C	D
Dinner	B	A	C	A	A	D	B	D	D	C	A	C	C	B	B

Results will be discussed in the next section along with information gathered in pretest and posttest exit interviews.

In summary, the following types of information were collected:

1. Pretest

    a. Test crew knowledge and/or experience with habitats
    b. Expectations for life in the habitat
    c. General eating habits:
        (1) Foods (preferences and aversions)
        (2) Eating schedule
        (3) Meal preparation
        (4) Familiarity with food service equipment

2. Test

    a. Meal preparation
        (1) Mode of preparation
            a. Location of food items
            b. Ease of use of food preparation equipment
        (2) Time information
    b. During meal
        (1) Acceptance of food items
        (2) Portion size
        (3) Amount consumed
        (4) Variety
        (5) Ease of use of utensils
        (6) Time to eat
    c. After meal
        (1) Waste disposal: food and packaging
        (2) Cleaning of food preparation equipment and utensils
        (3) Consumption of "snacks" and beverages
    d. End of test
        (1) Utilities used
        (2) Waste generation

3. Posttest

    a. Ease of use of food preparation equipment, serving equipment, and cleaning procedures
    b. Meal information
        (1) Overall food acceptance
        (2) Variety
        (3) Portion size
        (4) Frozen vs. nonfrozen
        (5) Selective vs. nonselective
    c. Identify problem areas and make recommendations for improvements

RESULTS

Questionnaires

Frozen vs. Nonfrozen Food. Mean scores from the posttest questionnaires for all the crew members combined were used to compare the frozen and nonfrozen food items. Table 6 shows the cumulative means and standard deviations for each comparison. Mean scores less than 6.0 were compared to a standard of 6.0. Those scores which are less than, but not significantly different from, 6.0 indicate an acceptable rating. Scores of 6.0 or greater indicate a favorable rating (see rating scale in Table 6). Frozen food items were rated higher than nonfrozen items for most of the features shown in Table 6. The test crews rated food quality significantly higher for frozen food items than nonfrozen food items ($t(11) = 3.56$, $p \leq 0.01$). The appearance of frozen foods was also preferred over that for nonnfrozen foods ($t(11) = 4.53$, $p \leq 0.01$). This preference for frozen foods was also reflected in the ratings for portion size, appearance, flavor, and variety, although these comparisons did not reach statistical significance.

Selective vs. Nonselective Menus. Another important question asked during these tests was whether crew members preferred selective or nonselective menus. Selective menus offered a choice of individual meal components. Nonselective menus offered a choice of two complete meals. Crew members strongly preferred selective menus for both frozen meals and nonfrozen meals ($F(1,11) = 9.30$, $p \leq 0.011$).

Equipment. Data from the pretest and posttest questionnaires were used to determine the percentage of crew members who knew how to operate certain pieces of kitchen equipment as well as the degree of difficulty of actually using the equipment. Table 7 displays the percentage of crew members who knew how to operate five pieces of kitchen equipment prior to the start of the test period. Table 8 shows means and standard deviation of the ease of use for kitchen equipment as indicated in posttest data.

It is clear from Tables 7 and 8 that, the 10 crew members had little difficulty learning to operate unfamiliar kitchen equipment. For example, although only 20% of the crew members knew how to operate an induction cooktop, it was rated as easy to use. Similarly, the trash compactor, which only 30% of the crew members knew how to use prior to the tests, was rated very easy to use. Thus, a lack of experience with the kitchen equipment did not present a problem for the test crews.

Cleaning. Table 9 shows the means and standard deviations for the ease of cleaning kitchen items. It is evident from the Table that all the kitchen equipment was fairly easy to clean. Some crew members rated the floors difficult to clean, although it was not a major problem. The floor had been coated with a non-skid abrasive; however, in retrospect, another easier to clean, non-skid surface should have been used in the food service area.

TABLE 6. Mean and Standard Deviation of Ratings for General Features of Foods and Menu Types - Cumulative Results.

Item	Frozen Mean	Frozen Std Dev	Nonfrozen Mean	Nonfrozen Std Dev
Food Quality[a]	7.00	1.21	5.75[c]	1.60
Portion Size	5.58[c]	1.68	5.08[c]	1.68
Food Appearance[a]	5.67[c]	1.44	4.25[d]	1.91
Flavor	6.17	2.04	5.92[c]	1.08
Variety	5.67[c]	1.50	5.25[c]	1.60
Selective Menu[b] Choice	6.42	2.15	6.67	1.56
Nonselective Menu Choice	3.92[d]	1.62	4.08[d]	1.62

Note:
The mean expresses the rating for the general features using the scale below.

1	2	3	4	5	6	7	8	9
Dislike Extremely				Neither like nor dislike				Liked Extremely

[a] Mean ratings for frozen foods were significantly higher than for nonfrozen foods.

[b] Mean ratings were significantly higher for selective menus for both frozen and nonfrozen foods.

[c] Mean ratings were not significantly different from the standard of 6.0 for these general features.

[d] Mean ratings were significantly less than the standard of 6.0 for these features.

TABLE 7. Percentage of Test Crew Members Who Knew How to Operate Kitchen Equipment.

Equipment	Percentage
Microwave Oven	80.0
Induction Cooktop	20.0
Trash Compactor	30.0
Garbage Disposal	100.0
Dishwasher	80.0

TABLE 8. Mean and Standard Deviation of Ease of Use for Kitchen Equipment.

Item	Mean	Std Dev
Microwave Oven	1.58	0.67
Induction Cooktop	1.42	0.51
Sink	1.83	1.59
Refrigerator	1.83	1.27
Freezer	1.40	0.70
Toaster	1.83	0.94
Dishwasher	2.08	1.00
Trash Compactor	1.50	0.80
Garbage Disposal	1.55	0.69

Note: The mean expresses the ratings for the degree of difficulty:

1	2	3	4	5	6	7	8	9
Extremely Easy								Extremely Difficult

TABLE 9. Mean and Standard Deviation of Ease of Cleaning Kitchen Equipment.

Item	Mean	Std Dev
Microwave Oven	2.67	1.78
Induction Cooktop	2.08	1.31
Sink	2.35	1.22
Trash Compactor	2.33	1.41
Floors	5.08	2.97
Counters	2.42	1.31
Table	2.17	1.19

Note: The mean expresses the ratings for the degree of difficulty:

1	2	3	4	5	6	7	8	9
Extremely Easy								Extremely Difficult

Time. After each meal, the crew members completed a meal questionnaire that asked for an estimation of the time required to perform certain tasks. Table 10 shows the estimated amount of time the crew members took to perform each task. The results indicate that each task took a relatively small amount of time to perform. An average of 40 minutes was required to complete a meal, from preparation to cleanup after eating the meal.

Problems. Other kitchen problems encountered by crew members are presented in Table 11. Although, no item was experienced often, keeping the floors clean was a problem for most of the crew members. One crew member encountered dirty dishes and dirty glasses every time he used the kitchen, whereas others encountered them less than 25% of the time. The same crew member experienced dirty utensils between 50-75% of the time, but all other crew members encountered dirty utensils less than 25% of the time. No other problem was encountered more than 25% of the time. Insects, dirty pots, and lack of condiments were experienced less than 10% of the time. When questioned further, insects referred to a few fruit flies. Dirty serving counters and dirty tables were encountered less than 25% of the time. Thus, no item was rated as a major problem.

TABLE 10. Estimated Time (%) to Perform Kitchen Tasks - Cumulative Results.

Task	Time (Minutes) 0-5	6-10	11-15	16-20	20+	No Response
Assemble utensils/cookware for food preparation	83.1	8.3	1.3	0.0	0.0	7.3
Assemble ingredients for food preparation	93.0	5.3	0.0	0.0	0.0	1.6
Total food preparation and serving time	21.5	52.1	16.2	6.7	1.3	1.6
Eating time	3.4	33.2	48.3	12.3	1.1	1.6
Cleanup time after meal	69.7	26.7	2.8	0.0	0.0	0.8

Note: Based on measurement of 148 meals, the numbers in the Table are average percent of time required to perform tasks. For example, 83.1% of the time the test crew members took 0-5 minutes to assemble utensils/cookware for food preparation.

TABLE 11. Percentage of Time Test Crew Members Encountered Kitchen Problems - Cumulative Results.

Item	Never	0-10%	10-25%	25-50%	50-75%	75-100%	Always
Insects (Fruit Fly)	75.0	25.0	0.0	0.0	0.0	0.0	0.0
Dirty Serving Counter	25.0	50.0	25.0	0.0	0.0	0.0	0.0
Dirty Dishes	8.3	58.3	25.0	0.0	0.0	0.0	8.3
Dirty Glasses	25.0	50.0	16.7	0.0	0.0	0.0	8.3
Dirty Utensils	8.3	66.7	16.7	0.0	8.3	0.0	0.0
Dirty Pots	50.0	50.0	0.0	0.0	0.0	0.0	0.0
Dirty Floors	16.7	33.3	25.0	16.7	8.3	0.0	0.0
Dirty Tables	33.3	58.3	8.3	0.0	0.0	0.0	0.0
Out of Condiments	83.3	16.7	0.0	0.0	0.0	0.0	0.0

Note: Based on measurement of 148 meals, the numbers in the Table are percentages of test crew members who encountered problems. For example, 75% of the test crew members never encountered insects.

Weight and Volume of Food Service Trash. Table 12 summarizes the weight and volume of all food service related trash for each operational test and for the entire test period. Food service trash was essentially packaging material. Plate waste was disposed of via the in-sink garbage disposal; non-food trash was kept separate. The measurements represent compacted trash. The trash generated during the entire test period averaged .44 lbs and .048 ft^3 per person per meal.

TABLE 12. Weight and Volume Summary of Food Service Trash Collection.

TEST PERIOD	NO. DAYS	TOTAL WEIGHT (lb)	TOTAL VOLUME (ft^3)	PER PERSON PER MEAL WEIGHT (lb)	PER PERSON PER MEAL VOLUME (ft^3)
1	4	24.4	1.80	.51	.038
2	4	20.5	2.40	.43	.050
3	7	34.0	4.36	.41	.052
OVERALL	15	78.9	8.56	.44	.048

Electrical Usage. Hamilton Standard monitored electrical power usage in the habitat throughout the entire test period and estimated that approximately 10% of the total single phase power used was related to food service. The resulting estimate of the food service power demand was an average of 4.8 kW per day over the entire test period.

Water Usage. Hamilton Standard measured water used by the food service system through meters attached to the incoming potable water line and to the water feed line for the dishwasher. These measurements are summarized in Table 13. Water required for cleanup and for the preparation of foods and beverages was not measured separately, but should be minimal due to the use of individual pre-prepared food products. Therefore, this amount does not represent a significant percent of the per person requirement noted in Table 13. Potable water usage during test period 2 was significantly greater than usage during both test periods 1 and 3 for unknown reasons.

TABLE 13. Summary of Food Service System Water Usage.

TEST PERIOD	Potable Water (gal/day)	Dishwasher (gal/day)	Total (gal/day)	Per Person (gal/day)
1	26	12	38	9.50
2	47	15	62	15.50
3	25	12	37	9.25

Posttest Interviews: Food Service Issues

All crew members were interviewed at the conclusion of each test period. The general questions posed concerned Food Management Group instructions, eating habits, and menu items.

The three test crews were in agreement on a number of issues. They considered the food positioning and preparation instructions more than adequate. Most believed that the distance from the storage room to the kitchen posed a problem.

Flexible meal periods were well-received because each crew member had a different work schedule. The three crews indicated that the work schedule often interfered with their regular meal times. No one chose to eat while operating the control console, as this shift kept the crew member very busy. On the contrary, assisting the control console operator was quite boring and most considered this shift a good time to eat. As the work schedule began at 8 AM and ended at midnight, three meals often seemed insufficient. Most would have enjoyed the addition of a fourth meal, especially since exercising often increased their appetites.

Convenience seemed to be a major concern for many of the test crew members. Replating food products for microwave heating was often perceived as inconvenient. They also preferred to minimize cleanup by using a limited number of pots and pans.

The crew expressed different judgements on the quantity of food provided. Although each meal provided enough calories, some felt that there was never enough to eat, while others felt that there was usually too much food. The TMT and F.E. Warren product portion sizes were generally satisfying, whereas the quantity provided in some of the commercial products was usually insufficient.

Additional comments were made on some of the food items provided by Natick. The first test crew stated that most of the TMT items looked and tasted alike. Yet the third test crew was very pleased with the quality of the TMTs. Overall, TMT food acceptance ratings were favorable. Members of all test crews were impressed with the F.E. Warren items.

The crew was generally dissatisfied with the white bread that was provided and indicated a preference for dark bread. They also suggested adding soups, cheeses, fresh fruits, Gatorade™, and more fiber to the menu.

Posttest Interviews: Behavioral Issues

Conflict Resolution. In each test there was at least some sort of interpersonal conflict. In one case, the conflict was related to communication and cooperation with test engineers on the outside of the Habitat who were monitoring the test crew by both voice communication and camera. By the second test a camera had been installed which permitted the crew members to see the test engineers on the outside. This addition significantly reduced the difficulties between those on the inside of the Habitat and those on the outside in subsequent tests.

In later tests, conflicts arose among crew members primarily regarding use of the audio/visual (A/V) entertainment equipment and use of the bathroom. The conflicts regarding the A/V equipment were usually resolved through discussion of such issues as loudness and type of music played. The one persistent interpersonal problem was related to use of the bathroom by one of the male crew members. He typically left the bathroom door open when he used the toilet and when he showered. Not surprisingly, the women crew members were offended by this practice. However, it is notable that they neither mentioned this to the individual directly nor to the other male crew members. Indeed, the crew member in question claimed not to know that he was doing anything that bothered other crew members. During the posttest interviews it became clear that this and similar types of interpersonal conflicts could be tolerated for the short duration of these tests. What is not clear is what would have happened in a habitat living situation that lasted for a month or more.

Sleeping Quarters. Crew members often commented on the cramped space in the sleeping areas, especially around the top bunks. In spite of an occasional bumped head or shin, all crew members reportedly slept well most of the time. The most frequent positive comment was that the sleeping area was quiet, probably due to its location and to the fact that there was a door between that area and the rest of the Habitat.

Scheduling. During the tests the crews were supposed to adhere to schedules for work, exercise, and recreation. A distinct pattern emerged over the three tests. The test crews adhered to the work schedules very closely. Often those crew members who were off duty would assist those on duty if a task needed to be done which otherwise would have been difficult to accomplish. The schedules for exercise and for recreation were not well followed and were practically ignored by the end of each test.

Food Service Guidelines. The test crews were also supposed to adhere to guidelines established for the food service system (see Appendix C). For example, the only foods that should have been eaten were those selected from the menu on the previous day. The crew members admitted to raiding the storage room or the freezer for items such as cookies, pizzas, and hamburgers. The crew also ignored the guideline that stated meals were to be consumed in the kichen only. They preferred to eat in the recreation room, partly because they found the eating booth uncomfortable.

Finally, the test crews had several recommendations for improving the recreation facilities within the Habitat. For the exercise area, it was recommended that more space be provided, that music be available in the gym area, and that some sort of decor be provided for the gym, especially the walls. In the A/V area, all crew members agreed that a greater variety of taped movies should be provided.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Natick has completed the evaluation of the pre-prototype Advanced Base Food Service System. This evaluation proved to be extremely interesting yet incomplete. The short test period did not allow sufficient data collection to develop a definitive picture of a habitat food service system. However, it is clear that individuals untrained in food service will have little difficulty operating a food service system provided the equipment and food preparation requirements are not complex. Results indicate, at least for small numbers of personnel, that it is practical for a food service system to utilize the following.

- Selective Menus
- Individual Prepared Pre-portioned Food Items
- Flexible Meal Periods

Recommendations

Recognizing that further efforts are necessary to refine the system, the following recommendations are made:

Food Management. A longer test period is necessary to refine the selective menu concepts and variety issues need to be addressed as a function of time.

- A la Carte costing procedures should be developed to interface with peacetime operations.
- Greater emphasis should be placed on cleaning food preparation and eating surfaces.
- Inventory management requires additional definition. Selection of individual meal components does not require that personnel have free access to food stocks. One person should be designated as the food service manager.
- The food storage area should be adjacent to or within the food preparation facility.

Research and Development. Military food service design specialists should be consulted earlier in the development cycle.

- Packaging F.E. Warren products in microwaveable containers should be investigated.
- A study should be conducted to determine if F.E. Warren facilities should be expanded to include the production of TMTs and other military food used to support unique Air Force mobility requirements.
- Hot and cold beverage dispensers should be investigated for compatibility with the concept.

REFERENCES

1. Departments of the Army, Navy, and Air Force; Army Regulation 40-25/Naval Command Medical Instructions 10110.1/Air Force Regulation 160-95; 15 May 1985.

2. Warren, P.H., Psychosocial Accommodations to Group Confinement in the Advanced Base Habitat, NATICK/TR-88/063, U.S. Army Natick RD&E Center, Natick, MA 01760, September 1988.

APPENDIX A.

Summary of Serviceware, Utensils, and Housekeeping Costs

TABLE A-1. Serviceware List.

ITEM	SIZE	QUANTITY	BRAND	EST COST[d]	TOTAL
SERVINGWARE					
PLATES, LARGE[a]	10CWNR	2 DZ	CAMBRO[b]	$192	
PLATES, SMALL[a]	125CWNR	2 DZ	CAMBRO[b]	120	
BOWLS	50CW	2 DZ	CAMBRO[b]	144	
DOMES[c]	100CW	1 DZ	CAMBRO[b]	96	$552
BEVERAGE SERVICE					
CUPS	770CW	2 DZ	CAMBRO	48	
TUMBLERS[c]	1200CW	3 DZ	CAMBRO	72	120
CUTLERY[e]					
FORKS	6"	3 DZ	INSTITUTIONAL	18	
KNIVES, SERRATED	6"	3 DZ	INSTITUTIONAL	18	
SOUP SPOONS	6"	2 DZ	INSTITUTIONAL	18	
TEA SPOONS	6"	3 DZ	INSTITUTIONAL	18	
TRAY, CUTLERY				3	75
MISCELLANEOUS					
NAPKINS	3.5" X 7"	1 CS		20	
NAPKIN DISPENSER	3.5" X 7"	3 EA		6	
SHAKER, SALT/PEPPER		1 DZ		10	
CONTAINER, SUGAR		3 EA		6	42
DISPOSABLES					
CUPS, PAPER, HOT	10 OZ	1 CS		12	
STRAWS, WRAPPED	8"	1 BX		2	
TOOTHPICKS, WRAPPED		1 BX		2	16
TOTAL					$805

[a] BEIGE 133
[b] CLEAR 152
[c] MINIMUM ORDER 4 DZ
[d] LIST COST, USUALLY DISCOUNTED
[e] COMMERCIAL GRADE

TABLE A-2. Cookware/Utensil List.

ITEM*	SIZE	QUANTITY	BRAND	EST COST
CAN OPENER, MANUAL	SMALL	4 EA		$20.00
KNIFE, PARING	3"	8 EA		24.00
CUTTING BOARD, PLASTIC	10" X 12"	1 EA		12.00
FUNNELS	SMALL	2 EA		2.00
MEASURING SPOONS		2 SETS		2.00
MEASURING CUPS, CLEAR	1 CP	2 EA		15.00
MIXING, PAN, CLEAR	8" X 8"	1 EA	PYREX	8.00
PADS, HOT		1 DZ		20.00
PITCHER, PLASTIC	2 QT	2 EA		8.00
SPATULA, RUBBER	SMALL	3 EA		4.00
SPATULA, METAL	8" X 1 3/4" BLADE	3 EA		9.00
SPOON, SOLID	12"	2 EA		3.00
SPOON, SLOTTED	12"	2 EA		3.00
SHEARS, KITCHEN	7"	2 EA		4.00
STRAINER, PLASTIC	LARGE	2 EA		6.00
THERMOMETER	INSTITUTIONAL	2 EA		20.00
TONGS	6"	2 EA		4.00
TIMER		2 EA		20.00
TOTAL				$184.00
	COOKWARE			
POT	1 1/2 QT	4 EA	REVERE	$140.00
POT	3 QT	2 EA	REVERE	80.00
POT	12 QT	2 EA	REVERE	100.00
KETTLE	2 QT	1 EA	TRIGGER	30.00
WRAP, PLASTIC		12 EA		48.00
TOTAL				$398.00
TOTAL				$582.00

* COMMERCIAL GRADE

TABLE A-3. Housekeeping List.

ITEM*	QUANTITY	EST COST
BROOM UPRIGHT, CORN	2 EA	$10.00
BRUSHES, KITCHEN	4 EA	6.80
DISHDRAIN, RUBBER	1 EA	5.00
DISHRACK, RUBBER	1 EA	4.00
DRAINBOARD, RUBBER	1 EA	5.00
GLOVES, RUBBER	1 DZ	12.00
MOP/WET/DRY	3 EA	15.00
MOP PAIL/WRINGER/CASTERS	1 EA	30.00
PAD, SCOURING	1 DZ	12.00
PAN, DUST	2 EA	10.00
SOAP, LIQUID, HANDWASHING	1 DZ	12.00
SPONGES	1 DZ	12.00
TOWELS COUNTER	2 DZ	19.20
TOTAL		$153.00

*COMMERCIAL GRADE

APPENDIX B.

Menu Nutritional Analyses

TABLE B-1. Nutritional Analysis of Primary Menu Selections.

MENU ANALYSIS
DATE: 1 April 87
DAY: 1
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
PEACHES, TMT	179.	.9	.2	9.	37.	.7	5.	295.	14.	976.	7.	.00	.05	1.4	.00	45.4	188.	227.
CEREAL, HOT, OATMEAL	163.	3.8	1.9	17.	108.	1.1	401.	115.	40.	0.	0.	.15	.04	.2	.00	18.3	104.	189.
OMELET, CHEESE, TMT	222.	41.4	15.3	535.	704.	4.6	1382.	313.	39.	3651.	0.	.29	.13	.3	.16	8.5	629.	326.
DOUGHNUTS, POWDERED, BITE SIZE	15.	1.7	12.0	18.	0.	.6	222.	0.	0.	6.	0.	.08	.06	.8	.00	30.2	228.	57.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	1.8	7.0	68.	198.	.8	314.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	791.	59.1	48.8	936.	1265.	7.8	2391.	1569.	159.	8076.	57.	1.93	.80	3.1	2.18	144.4	1537.	
% OF MRDA	22.	59.1	34.9	117.	158.	43.	39.	84.	45.	162.	96.	121.	42.	15.	99.	32.1	43.	
LUNCH																		
PIZZA, CHEESE, FROZEN	85.	21.2	24.5	375.	386.	1.3	828.	342.	48.	927.	0.	.15	.44	1.3	.15	48.0	497.	184.
PUDDING POP, FROZEN	39.	2.0	3.0	0.	48.	.0	106.	0.	14.	0.	5.	.00	.10	.5	.00	16.0	90.	50.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
SUBTOTAL	327.	31.7	36.0	663.	661.	1.3	1050.	694.	94.	1269.	7.	.22	.95	2.0	1.00	76.0	745.	
% OF MRDA	9.	31.7	25.7	83.	83.	7.	17.	37.	27.	25.	12.	14.	50.	10.	46.	16.9	21.	
DINNER																		
TUNA W/NOODLES, TMT	247.	37.5	12.7	42.	329.	2.6	867.	316.	55.	880.	0.	.26	.20	9.8	.33	25.4	368.	326.
PEAS, CANNED	144.	5.8	.5	32.	99.	2.5	401.	163.	29.	765.	15.	.19	.10	1.7	.00	17.7	97.	170.
PUDDING, BUTTERSCOTCH	87.	1.5	3.3	76.	88.	.1	237.	88.	12.	15.	1.	.02	.13	.1	.00	28.6	151.	121.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	720.	59.9	31.3	504.	818.	7.2	2059.	1000.	145.	2156.	19.	.74	1.01	13.7	1.21	122.0	1014.	
% OF MRDA	20.	59.9	22.3	63.	102.	40.	34.	53.	41.	43.	32.	46.	53.	65.	55.	27.1	28.	
TOTAL	1838.	150.8	116.1	2103.	2744.	16.2	5501.	3262.	398.	11501.	84.	2.89	2.76	18.8	4.39	342.3	3296.	
% OF MRDA	51.	150.8	82.9	263.	343.	90.	90.	174.	114.	230.	140.	180.	145.	90.	200.	76.1	92.	
MRDA *	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

*Military Recommended Dietary Allowances. For water requirements, AFR 160-95 recommends a minimum of 1 milliliter of water per calorie expended. However, water requirements may increase 50 to 100 percent depending on hot climate and/or expending high levels of energy. Even in cold climates, heavy physical activity with sweating in insulated clothes will increase water needs. In addition, diets high in salt and protein will increase water requirements.

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 2
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, PINEAPPLE, ASEPTIC	214.	1.0	.3	37.	22.	.8	3.	372.	30.	125.	22.	.12	.05	.5	.22	33.8	138.	250.
CEREAL, HOT, OATMEAL	163.	5.8	1.9	17.	106.	1.1	401.	115.	40.	0.	0.	.15	.04	.2	.00	18.3	104.	189.
EGG OMELETTE HOT POCKET, FROZEN	199.	21.3	11.3	0.	0.	.0	1085.	0.	0.	0.	0.	.00	.00	.0	.00	41.5	801.	284.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	3.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	791.	39.5	42.8	411.	556.	2.7	1870.	1333.	136.	3567.	73.	1.68	.61	1.1	2.24	135.5	1429.	
% OF MRDA	22.	39.5	30.6	51.	70.	15.	31.	71.	39.	71.	122.	105.	32.	5.	102.	30.1	40.	
LUNCH																		
CHICKEN STEW, TMT	251.	37.7	14.7	59.	427.	2.0	913.	965.	63.	4665.	0.	.07	.26	13.7	.33	29.0	359.	326.
CARROTS, CANNED	155.	1.4	.5	51.	37.	1.2	401.	204.	8.	25500.	3.	.03	.05	.7	.05	11.4	51.	170.
PEARS, TMT	180.	.5	.5	11.	16.	.5	2.	191.	11.	0.	2.	.00	.05	.2	.00	44.3	184.	227.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	827.	44.7	30.4	474.	782.	5.5	1870.	1792.	130.	30662.	8.	.36	.93	16.6	1.26	135.0	991.	
% OF MRDA	23.	44.7	21.7	59.	98.	31.	31.	96.	37.	613.	14.	23.	49.	79.	57.	30.0	28.	
DINNER																		
PORK, BBQ, TMT	189.	48.9	50.2	85.	538.	4.9	1239.	1428.	95.	0.	0.	.72	.78	14.0	.39	31.3	773.	326.
RICE, DRY	141.	6.1	10.9	41.	116.	3.9	620.	150.	23.	0.	0.	.48	.05	3.6	.07	66.1	388.	227.
APPLESAUCE, CANNED	172.	.5	.2	9.	11.	1.1	5.	148.	11.	91.	2.	.05	.02	.0	.07	54.0	207.	227.
COOKIE BAR, FIG	8.	2.3	3.2	45.	35.	.6	146.	115.	18.	64.	0.	.02	.04	.2	.00	43.7	208.	58.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	750.	72.9	79.4	533.	1001.	12.4	2553.	2272.	195.	651.	5.	1.53	1.47	19.9	1.41	245.5	1972.	
% OF MRDA	21.	72.9	56.7	67.	125.	69.	42.	121.	56.	13.	8.	95.	77.	95.	64.	54.5	55.	
TOTAL	2369.	155.1	152.6	1418.	2339.	20.6	6293.	5397.	462.	34880.	86.	3.57	3.01	37.6	4.91	516.0	4393.	
% OF MRDA	66.	155.1	109.0	177.	292.	114.	103.	289.	132.	698.	143.	223.	159.	179.	223.	114.7	122.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 3
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, GRAPEFRUIT, ASEPTIC	225.	1.2	.3	22.	37.	.5	3.	405.	27.	200.	95.	.10	.05	.5	.10	23.0	98.	250.
CEREAL, HOT, OATMEAL	163.	3.8	1.9	17.	108.	1.1	401.	115.	40.	0.	0.	.15	.04	.2	.00	18.3	104.	189.
EGGS, SCRAMBLED W/SAUSAGE, HASHBROWNS, FROZEN	113.	12.0	32.9	49.	0.	1.4	814.	0.	22.	0.	2.	.19	.32	1.4	.00	17.0	411.	177.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	744.	35.1	56.9	508.	645.	5.8	1985.	1445.	177.	3642.	147.	2.04	1.09	4.4	2.15	138.7	1204.	
% OF MRDA	21.	35.1	40.6	63.	81.	32.	32.	77.	51.	73.	246.	128.	58.	21.	98.	30.8	33.	
LUNCH																		
FISH, FRIED, F.E. WARREN	75.	22.1	7.2	45.	229.	1.4	200.	393.	41.	0.	2.	.05	.08	3.6	.00	6.6	186.	113.
POTATO, MASHED, F.E. WARREN	124.	3.3	6.7	37.	75.	.6	360.	390.	34.	265.	14.	.12	.08	1.6	.14	19.2	147.	156.
BEANS, GREEN, F.E. WARREN	135.	3.3	5.7	59.	48.	1.0	69.	222.	1.	1066.	7.	.10	.13	.6	.09	8.3	86.	145.
PIE, APPLE, F.E. WARREN	68.	3.1	15.8	11.	31.	.4	427.	114.	10.	43.	1.	.28	.28	.6	.04	54.1	364.	142.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	643.	46.0	50.1	506.	734.	5.3	1610.	1551.	134.	1870.	27.	.82	1.15	8.4	1.15	138.5	1180.	
% OF MRDA	18.	46.0	35.8	63.	92.	30.	26.	83.	38.	37.	46.	51.	60.	40.	52.	30.8	33.	
DINNER																		
STEAK, SALISBURY W/POTATO, CORN, DESSERT, EZN	217.	20.4	21.7	64.	0.	2.4	1068.	0.	67.	98.	6.	.12	.24	5.2	.00	43.0	448.	305.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	458.	35.6	36.4	417.	301.	4.3	1621.	432.	116.	594.	9.	.39	.82	7.3	.88	93.4	846.	
% OF MRDA	13.	35.6	26.0	52.	38.	24.	26.	23.	33.	12.	14.	24.	43.	35.	40.	20.7	23.	
TOTAL	1844.	116.7	143.4	1431.	1680.	15.4	5216.	3429.	427.	6107.	183.	3.25	3.06	20.0	4.18	370.5	3230.	
% OF MRDA	51.	116.7	102.4	179.	210.	86.	85.	183.	122.	122.	306.	203.	161.	95.	190.	82.3	90.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 4
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
PEACHES, IMT	179.	.9	.2	9.	27.	.7	5.	295.	14.	976.	7.	.00	.05	1.4	.00	45.4	188.	227.
CEREAL, HOT, OATMEAL	163.	5.8	1.9	17.	108.	1.1	401.	115.	40.	0.	0.	.15	.04	.2	.00	18.3	104.	189.
OMELET, CHEESE, IMT	222.	41.4	15.3	535.	704.	4.6	1382.	313.	39.	3651.	0.	.29	.13	.3	.16	8.5	629.	326.
DOUGHNUTS, POWDERED, BITE SIZE	12.	1.7	12.0	18.	0.	.6	222.	0.	0.	6.	0.	.08	.06	.8	.00	30.2	228.	57.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	314.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	791.	59.1	48.8	936.	1265.	7.8	2391.	1569.	159.	8076.	57.	1.93	.80	3.1	2.18	144.4	1537.	
% OF MRDA	22.	50.1	34.9	117.	158.	43.	39.	84.	45.	162.	96.	121.	42.	15.	99.	32.1	43.	
LUNCH																		
HAMBURGERS ON SESAME ROLLS, FROZEN	126.	10.1	31.9	64.	0.	1.6	760.	0.	37.	999.	12.	.29	.25	2.9	.00	36.1	459.	206.
FRUIT & JUICE BAR, FROZEN	53.	1.0	1.0	0.	0.	.0	10.	0.	0.	0.	1.	.00	.00	.0	.00	16.0	70.	71.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
SUBTOTAL	392.	19.6	41.5	352.	227.	1.6	892.	351.	69.	1341.	16.	.36	.66	3.1	.85	64.0	688.	
% OF MRDA	11.	19.6	29.6	44.	28.	9.	15.	19.	20.	27.	27.	23.	35.	15.	39.	14.2	19.	
DINNER																		
HAM, DICED W/SCALLOPED POTATOES, IMT	251.	33.9	12.1	26.	512.	2.3	1731.	828.	52.	391.	0.	.52	.36	10.1	.52	22.8	336.	326.
CARROTS, CANNED	155.	1.4	.5	51.	37.	1.2	401.	204.	8.	25500.	3.	.03	.05	.7	.05	11.4	51.	170.
PEARS, IMT	180.	.5	.5	11.	16.	.5	2.	191.	11.	0.	2.	.00	.05	.2	.00	44.3	184.	227.
COOKIE BAR, PEANUT BUTTER, CHOCOLATE COVERED	3.	5.9	14.6	32.	0.	.4	160.	0.	0.	0.	0.	.00	.06	1.5	.00	30.2	280.	54.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	831.	56.8	42.4	473.	867.	6.2	2848.	1655.	121.	26388.	8.	.82	1.09	14.5	1.46	159.1	1248.	
% OF MRDA	23.	56.8	30.3	59.	108.	34.	47.	88.	34.	528.	14.	51.	58.	69.	66.	35.3	35.	
TOTAL	2014.	135.6	132.7	1761.	2358.	15.6	6131.	3575.	348.	35804.	82.	3.11	2.56	20.8	4.49	367.4	3473.	
% OF MRDA	56.	135.6	94.8	220.	295.	87.	100.	191.	100.	716.	136.	194.	135.	99.	204.	81.6	96.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 5
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, GRAPEFRUIT, ASEPTIC	225.	1.2	.3	22.	37.	.5	3.	405.	37.	200.	95.	.10	.05	.5	.10	23.0	98.	250.
CEREAL, COLD, DRY	1.	2.2	.1	5.	13.	.4	281.	34.	3.	0.	0.	.12	.02	.6	.02	23.9	108.	28.
FRENCH TOAST, FROZEN	47.	6.4	4.0	95.	121.	1.5	380.	98.	12.	175.	0.	.15	.17	1.6	.30	27.1	169.	86.
SAUSAGE, FROZEN	20.	10.3	25.2	4.	92.	1.4	546.	153.	9.	0.	0.	.45	.19	2.1	.11	.0	271.	57.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	508.	31.6	48.9	483.	694.	4.5	1592.	1535.	118.	3817.	146.	2.23	.96	5.3	2.54	116.0	1033.	
% OF MRDA	14.	31.6	34.9	60.	86.	25.	26.	82.	34.	76.	243.	139.	51.	25.	116.	25.8	29.	
LUNCH																		
PIZZA, CHEESE, FROZEN	85.	21.2	24.5	375.	386.	1.3	828.	342.	48.	927.	0.	.15	.44	1.3	.15	48.0	497.	184.
PUDDING POP, FROZEN	29.	2.0	3.0	0.	48.	.0	100.	0.	14.	0.	5.	.00	.10	.5	.00	16.0	90.	50.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
SUBTOTAL	327.	31.7	36.0	663.	661.	1.3	1050.	694.	94.	1269.	7.	.22	.95	2.0	1.00	76.0	745.	
% OF MRDA	9.	31.7	35.7	83.	83.	7.	17.	37.	27.	25.	12.	14.	50.	10.	46.	16.9	21.	
DINNER																		
CHILI CON CARNE, TMT	213.	42.7	44.3	88.	391.	8.5	1493.	1405.	85.	0.	0.	.07	.52	10.8	.26	22.5	659.	326.
RICE, DRY	141.	6.1	10.9	41.	116.	3.9	620.	150.	23.	0.	0.	.48	.05	3.6	.07	66.1	388.	227.
VEGETABLES, MIXED, CANNED	132.	2.0	5.7	32.	55.	.9	391.	202.	2.	7592.	6.	.04	.06	.7	.12	10.3	102.	145.
FRUIT MIX, TMT	181.	.7	.2	18.	35.	.7	2.	304.	0.	1010.	5.	.00	.07	1.4	.00	44.0	182.	227.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	907.	66.7	75.9	531.	888.	15.8	3060.	2493.	158.	9099.	12.	.85	1.27	18.5	1.33	193.2	1727.	
% OF MRDA	25.	66.7	54.2	66.	111.	88.	50.	133.	45.	182.	21.	53.	67.	88.	60.	42.9	48.	
TOTAL	1742.	130.1	160.8	1677.	2239.	21.6	5702.	4722.	369.	14185.	166.	3.30	3.18	25.8	4.87	385.2	3506.	
% OF MRDA	48.	130.1	114.3	210.	280.	120.	93.	252.	106.	284.	276.	206.	168.	123.	222.	85.6	97.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 6
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
PEARS, INT	180.	.5	.5	11.	16.	.5	2.	191.	11.	0.	2.	.00	.05	.2	.00	44.3	184.	227.
OMELET, CHEESE, INT	222.	41.4	15.3	535.	704.	4.6	1382.	313.	39.	3651.	0.	.29	.13	.3	.16	8.5	629.	326.
POPTARTS	5.	3.2	6.8	25.	51.	2.5	127.	96.	9.	0.	7.	.25	.26	2.5	.47	36.2	200.	52.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.9	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
SUBTOTAL	621.	56.4	38.1	927.	1196.	8.3	1847.	1443.	126.	6938.	60.	1.95	.96	3.5	2.65	131.0	1367.	
% OF MRDA	17.	56.4	27.2	116.	150.	46.	30.	77.	36.	139.	99.	122.	51.	16.	120.	29.1	38.	
LUNCH																		
FRANKS, INT	52.	11.3	24.8	5.	93.	1.4	1001.	0.	8.	0.	0.	.14	.18	2.3	.10	1.5	277.	91.
BEANS, BAKED, CANNED	160.	9.1	3.0	48.	207.	1.6	817.	474.	84.	200.	2.	.14	.02	.4	.00	42.0	241.	227.
PEACHES, INT	179.	.9	.2	9.	27.	.7	5.	295.	14.	976.	7.	.00	.05	1.4	.00	45.4	188.	227.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	632.	36.5	42.7	414.	628.	5.5	2376.	1202.	154.	1673.	12.	.54	.82	6.1	.98	139.2	1103.	
% OF MRDA	18.	36.5	30.5	52.	79.	31.	39.	64.	44.	33.	19.	33.	43.	29.	45.	30.9	31.	
DINNER																		
ROAST BEEF, F.E. WARREN	161.	37.0	16.3	20.	318.	4.8	125.	511.	32.	34.	0.	.11	.30	6.6	.02	5.4	352.	227.
POTATO, MASHED, F.E. WARREN	124.	3.3	6.7	37.	75.	.6	360.	390.	34.	265.	14.	.12	.08	1.6	.14	19.2	147.	156.
PEAS, F.E. WARREN	120.	7.4	5.9	29.	126.	2.8	234.	197.	3.	1095.	19.	.38	.13	2.5	.25	17.1	148.	145.
CAKE, YELLOW W/FROSTING, F.E. WARREN	16.	3.1	9.8	51.	84.	.5	156.	81.	14.	120.	0.	.01	.06	.1	.02	45.3	274.	75.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	663.	66.0	53.5	490.	904.	10.5	1429.	1611.	132.	2011.	35.	.89	1.14	12.8	1.32	137.4	1318.	
% OF MRDA	18.	66.0	38.2	61.	113.	58.	23.	86.	38.	40.	59.	56.	60.	61.	60.	30.5	37.	
TOTAL	1916.	158.9	134.4	1831.	2728.	24.4	5652.	4257.	412.	10622.	106.	3.38	2.92	22.4	4.95	407.6	3787.	
% OF MRDA	53.	158.9	96.0	229.	341.	135.	92.	227.	118.	212.	177.	211.	154.	106.	225.	90.6	105.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 7
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
GRAPEFRUIT SECTIONS, CANNED	207.	1.4	.2	30.	32.	.7	9.	337.	25.	22.	68.	.07	.05	.5	.05	17.3	68.	227.
CEREAL, HOT, OATMEAL	163.	5.8	1.9	17.	108.	1.1	401.	115.	40.	0.	0.	.15	.04	.2	.00	18.3	104.	189.
OMELET, CHEESE, TMT	222.	41.4	15.3	535.	704.	4.6	1382.	313.	39.	3651.	0.	.29	.13	.3	.16	8.5	629.	326.
CAKE, COFFEE	21.	3.8	8.4	31.	0.	1.3	193.	0.	0.	43.	0.	.11	.12	1.1	.00	42.7	259.	70.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	828.	60.8	45.2	969.	1270.	9.4	2367.	1607.	170.	7159.	119.	2.03	.86	2.5	2.22	128.7	1447.	
% OF MRDA	23.	60.8	32.3	121.	159.	47.	39.	85.	49.	143.	198.	127.	45.	12.	101.	28.6	40.	
LUNCH																		
SOLE IN WINE SAUCE W/FETTUCINE, BROCCOLI, EGN	163.	18.9	18.1	15.	0.	1.5	890.	625.	77.	99.	3.	.28	.23	2.8	.00	52.0	449.	255.
PUDDING POP, FROZEN	29.	2.0	3.0	0.	48.	.0	100.	0.	14.	0.	5.	.00	.10	.5	.00	16.0	90.	50.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	433.	36.1	35.9	368.	349.	3.4	1544.	1057.	139.	596.	10.	.54	.90	5.4	.88	118.4	936.	
% OF MRDA	12.	36.1	25.6	46.	44.	19.	25.	56.	40.	12.	17.	34.	47.	26.	40.	26.3	26.	
DINNER																		
TUNA W/NOODLES, TMT	247.	37.5	12.7	42.	329.	2.6	867.	316.	55.	880.	0.	.26	.20	9.8	.33	25.4	368.	326.
PEAS, CANNED	144.	5.8	.5	32.	99.	2.5	401.	163.	29.	765.	15.	.19	.10	1.7	.00	17.7	97.	170.
COOKIE BAR, PEANUT BUTTER, CHOCOLATE COVERED	3.	5.9	14.6	32.	0.	.4	160.	0.	0.	0.	0.	.00	.06	1.5	.00	30.2	280.	54.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	636.	64.4	42.6	459.	729.	7.4	1982.	912.	133.	2142.	18.	.71	.94	15.0	1.21	123.7	1143.	
% OF MRDA	18.	64.4	30.4	57.	91.	41.	32.	49.	38.	43.	30.	44.	49.	71.	55.	27.5	32.	
TOTAL	1897.	161.2	123.7	1796.	2348.	19.3	5893.	3569.	442.	9897.	146.	3.29	2.69	22.9	4.32	370.8	3527.	
% OF MRDA	53.	161.2	88.3	225.	294.	107.	96.	190.	126.	198.	244.	205.	142.	109.	196.	82.4	98.	
MRDA	3600.	100.	140.	800.	800.	18.	6130.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 8
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
PEARS, TMT	180.	.5	.5	11.	16.	.5	2.	191.	11.	0.	2.	.00	.05	.2	.00	44.3	184.	227.
OMELET, CHEESE, TMT	222.	41.4	15.3	535.	704.	4.6	1382.	313.	39.	3651.	0.	.29	.13	.3	.16	8.5	629.	326.
POPTARTS	5.	3.2	6.8	25.	51.	2.5	127.	96.	9.	0.	7.	.25	.26	2.5	.47	36.2	200.	52.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	2.0	68.	198.	.3	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
SUBTOTAL	621.	56.4	38.1	927.	1196.	8.3	1847.	1443.	126.	6938.	60.	1.95	.96	3.5	2.65	131.0	1367.	
% OF MRDA	17.	56.4	27.2	116.	150.	46.	30.	77.	36.	139.	99.	122.	51.	16.	120.	29.1	38.	
LUNCH																		
HAMBURGERS ON SESAME ROLLS, FROZEN	126.	10.1	31.9	64.	0.	1.6	760.	0.	37.	999.	12.	.29	.25	2.9	.00	36.1	459.	206.
FRUIT & JUICE BAR, FROZEN	53.	1.0	1.0	0.	0.	.0	10.	0.	0.	0.	1.	.00	.00	.0	.00	16.0	70.	71.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
SUBTOTAL	392.	19.6	41.5	352.	227.	1.6	892.	351.	69.	1341.	16.	.36	.66	3.1	.85	64.0	688.	
% OF MRDA	11.	19.6	29.6	44.	28.	9.	15.	19.	20.	27.	27.	23.	35.	15.	39.	14.2	19.	
DINNER																		
CHICKEN CLASSIC CASSEROLE, FROZEN	227.	17.0	5.1	43.	0.	3.1	511.	190.	31.	679.	0.	.20	.20	2.3	.00	34.9	261.	284.
SPAGHETTI, E.E. WARREN	297.	31.9	30.0	212.	404.	6.4	1730.	1139.	89.	2720.	38.	.43	.51	6.8	.00	66.3	569.	425.
BEANS, GREEN, E.E. WARREN	135.	2.3	5.7	50.	48.	1.0	69.	222.	1.	1066.	7.	.10	.13	.6	.09	8.3	86.	145.
PIE, APPLE, E.E. WARREN	68.	3.1	15.8	11.	31.	.4	427.	114.	10.	43.	1.	.28	.28	.6	.04	54.1	364.	142.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	968.	69.5	61.3	678.	784.	12.8	3291.	2097.	180.	5004.	49.	1.27	1.70	12.3	1.01	214.0	1677.	
% OF MRDA	27.	69.5	43.8	85.	98.	71.	54.	112.	51.	100.	82.	80.	89.	59.	46.	47.5	47.	
TOTAL	1981.	145.6	140.9	1957.	2207.	22.8	6030.	3892.	375.	13283.	125.	3.58	3.32	18.9	4.51	408.9	3732.	
% OF MRDA	55.	145.6	100.6	245.	276.	127.	99.	208.	107.	266.	209.	224.	175.	90.	205.	90.9	104.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 9
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, ASEPTIC	219.	2.0	.5	25.	45.	1.0	3.	497.	30.	500.	100.	.17	.05	.8	.00	28.0	120.	250.
CEREAL, COLD, DRY	1.	2.2	.1	5.	13.	.4	281.	34.	3.	0.	0.	.12	.02	.6	.02	23.9	108.	28.
PANCAKES W/SAUSAGE, FROZEN	80.	13.9	21.9	65.	0.	1.5	952.	0.	0.	0.	0.	.43	.32	3.6	.00	52.0	461.	170.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	515.	29.6	41.9	451.	484.	3.7	1618.	1376.	100.	3942.	151.	2.13	.92	5.3	2.03	145.9	1076.	
% OF MRDA	14.	29.6	29.9	56.	60.	21.	36.	73.	28.	79.	251.	133.	49.	25.	92.	32.4	30.	
LUNCH																		
CHICKEN STEW, TMT	251.	27.7	14.7	59.	427.	2.0	913.	965.	62.	4665.	0.	.07	.26	13.7	.33	29.0	359.	326.
CRANBERRY SAUCE	86.	.1	.3	8.	6.	.3	1.	42.	3.	28.	3.	.01	.01	.0	.03	52.1	203.	139.
RICE, DRY	141.	6.1	10.9	41.	116.	3.9	620.	150.	23.	0.	0.	.48	.05	3.6	.07	66.1	388.	227.
BEANS, GREEN, CANNED	156.	2.4	.3	76.	42.	2.5	401.	161.	24.	799.	7.	.05	.09	.5	.07	8.8	41.	170.
PUDDING, CHOCOLATE, TMT	133.	4.1	6.1	41.	173.	3.2	302.	488.	61.	250.	0.	.00	.16	.5	.00	81.5	397.	227.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	1008.	55.6	47.1	578.	1072.	13.7	2791.	2238.	221.	6238.	12.	.87	1.14	20.3	1.37	287.9	1785.	
% OF MRDA	28.	55.6	33.6	72.	134.	76.	46.	119.	63.	125.	20.	54.	60.	97.	62.	64.0	50.	
DINNER																		
TURKEY, F.E. WARREN	198.	20.7	4.6	51.	296.	2.8	740.	375.	38.	0.	0.	.08	.33	7.7	.66	6.4	252.	255.
POTATO, MASHED, F.E. WARREN	124.	3.3	6.7	37.	75.	.6	360.	390.	34.	265.	14.	.12	.08	1.6	.14	19.2	147.	156.
CORN, F.E. WARREN	113.	4.4	6.2	6.	107.	.0	69.	267.	1.	732.	7.	.13	.09	2.2	.42	27.3	164.	145.
ESKIMO PIE, FROZEN	40.	2.9	19.0	99.	76.	.0	43.	152.	16.	263.	0.	.02	.13	.8	.03	21.9	180.	85.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	717.	46.4	51.4	546.	855.	5.3	1766.	1616.	138.	1757.	24.	.61	1.20	14.2	2.14	125.1	1141.	
% OF MRDA	20.	46.4	36.7	68.	107.	30.	29.	86.	40.	35.	40.	38.	63.	68.	97.	27.8	32.	
TOTAL	2240.	131.5	140.3	1575.	2410.	22.8	6174.	5231.	459.	11937.	186.	3.61	3.26	39.9	5.55	558.9	4002.	
% OF MRDA	62.	131.5	100.2	197.	301.	127.	101.	279.	131.	239.	311.	226.	172.	190.	252.	124.2	111.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 10
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
PEARS, TMT	180.	.5	.5	11.	16.	.5	2.	191.	11.	0.	2.	.00	.05	.2	.00	44.3	184.	227.
OMELET, CHEESE, TMT	222.	41.4	15.3	535.	704.	4.6	1382.	313.	39.	3651.	0.	.29	.13	.3	.16	8.5	629.	326.
CAKE, COFFEE	21.	2.8	8.4	31.	0.	1.2	173.	0.	0.	43.	0.	.11	.12	1.1	.00	42.7	259.	70.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	638.	56.1	43.5	934.	1146.	7.0	1960.	1349.	117.	7136.	53.	1.91	.82	2.1	2.18	137.4	1459.	
% OF MRDA	18.	56.1	31.1	117.	143.	39.	32.	72.	33.	143.	88.	113.	43.	10.	99.	30.5	41.	
LUNCH																		
BEEF, CLASSIC CASSEROLE, FROZEN	250.	26.8	44.0	18.	3.	3.2	1544.	722.	18.	2996.	5.	.50	.45	6.3	.00	60.8	749.	454.
PIE, PEACH, F.E. WARREN	67.	3.5	15.2	14.	41.	.7	381.	212.	9.	1037.	4.	.03	.24	1.0	.00	54.2	362.	142.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	285.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	558.	45.5	74.0	385.	346.	5.8	2478.	1366.	75.	4530.	11.	.79	1.27	9.4	.88	165.4	1509.	
% OF MRDA	16.	45.5	52.9	48.	43.	32.	40.	73.	21.	91.	19.	49.	67.	45.	40.	36.8	42.	
DINNER																		
VEAL PARMESAN W/FETTUCINE, VEG, DESSERT, FZN	258.	21.2	20.2	115.	0.	2.1	1114.	0.	97.	480.	7.	.21	.31	5.2	.00	47.0	452.	348.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	285.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	499.	36.4	35.0	468.	301.	4.0	1667.	432.	146.	977.	9.	.47	.89	7.3	.88	97.3	850.	
% OF MRDA	14.	36.4	25.0	58.	38.	22.	27.	23.	42.	20.	16.	30.	47.	35.	40.	21.6	24.	
TOTAL	1695.	138.0	152.5	1786.	1793.	16.8	6105.	3147.	338.	12643.	74.	3.07	2.98	18.7	3.95	400.2	3818.	
% OF MRDA	47.	138.0	108.9	223.	224.	93.	100.	168.	97.	253.	123.	192.	157.	89.	179.	88.9	106.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 11
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
GRAPEFRUIT SECTIONS, CANNED	207.	1.4	.2	30.	32.	.7	9.	327.	25.	23.	68.	.07	.05	.5	.05	17.3	68.	227.
OMELET, CHEESE, TMT	222.	41.4	15.3	535.	704.	4.6	1382.	313.	39.	3651.	0.	.29	.13	.3	.16	8.5	629.	326.
POPTARTS	5.	3.2	6.8	35.	51.	2.5	127.	96.	9.	0.	7.	.25	.26	2.5	.47	36.2	200.	52.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	1.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
SUBTOTAL	648.	57.3	37.9	945.	1212.	8.6	1854.	1580.	139.	6961.	125.	2.02	.96	3.7	2.69	103.9	1251.	
% OF MRDA	18.	57.3	27.1	118.	152.	48.	30.	84.	40.	139.	209.	126.	51.	18.	122.	23.1	35.	
LUNCH																		
FRANKS, TMT	52.	11.3	24.8	5.	93.	1.4	1001.	0.	8.	0.	0.	.14	.18	2.3	.10	1.5	277.	91.
BEANS, BAKED, CANNED	160.	9.1	3.0	48.	207.	1.6	817.	474.	84.	200.	2.	.14	.02	.4	.00	42.0	241.	227.
PEACHES, TMT	179.	.9	.2	9.	23.	.7	5.	295.	14.	976.	7.	.00	.05	1.4	.00	45.4	188.	227.
BROWNIE, FUDGE & NUT	10.	3.4	13.0	37.	78.	1.8	175.	149.	30.	220.	0.	.22	.19	1.1	.11	47.3	302.	75.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	641.	39.8	55.7	451.	706.	7.3	2552.	1351.	184.	1892.	12.	.76	1.01	7.2	1.10	186.5	1405.	
% OF MRDA	18.	39.8	39.8	56.	88.	41.	42.	72.	53.	38.	19.	47.	53.	34.	50.	41.4	39.	
DINNER																		
TUNA W/NOODLES, TMT	247.	37.5	12.7	42.	329.	2.6	867.	316.	55.	880.	0.	.26	.20	9.8	.33	25.4	368.	326.
PEAS, CANNED	144.	5.8	.5	32.	99.	2.5	401.	163.	29.	765.	15.	.19	.10	1.7	.00	17.7	97.	170.
PEARS, TMT	180.	.5	.5	11.	16.	.5	2.	191.	11.	0.	2.	.00	.05	.2	.00	44.3	184.	227.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	813.	58.9	28.5	439.	745.	7.5	1824.	1102.	144.	2142.	20.	.71	.92	13.7	1.21	137.7	1047.	
% OF MRDA	23.	58.9	20.3	55.	93.	42.	30.	59.	41.	43.	33.	44.	48.	65.	55.	30.6	29.	
TOTAL	2103.	156.0	122.1	1835.	2663.	23.4	6230.	4033.	468.	10995.	157.	3.49	2.89	24.7	5.00	428.2	3702.	
% OF MRDA	58.	156.0	87.2	229.	333.	130.	102.	215.	134.	220.	262.	218.	152.	117.	227.	95.2	103.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 12
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, GRAPEFRUIT, ASEPTIC	225.	1.2	.3	22.	37.	.5	3.	405.	27.	200.	95.	.10	.05	.5	.10	23.0	98.	250.
EGGS, SCRAMBLED, FROZEN	79.	12.3	14.2	68.	208.	1.9	283.	161.	13.	1188.	0.	.09	.31	.1	.10	2.6	190.	110.
SAUSAGE, FROZEN	20.	10.3	15.2	4.	92.	1.4	546.	153.	9.	0.	0.	.45	.19	2.1	.11	.0	271.	57.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	289.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	2.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	566.	41.9	61.4	535.	837.	6.5	1599.	1644.	133.	4830.	146.	2.23	1.24	5.0	2.35	106.0	1151.	
% OF MRDA	16.	41.9	43.9	67.	105.	36.	26.	89.	38.	97.	243.	140.	65.	24.	107.	23.6	32.	
LUNCH																		
CHILI CON CARNE, TMT	213.	42.7	44.3	89.	391.	8.5	1493.	1405.	85.	0.	0.	.07	.52	10.8	.26	22.5	659.	326.
RICE, DRY	141.	6.1	10.9	41.	116.	3.9	630.	150.	23.	0.	0.	.48	.05	3.6	.07	66.1	388.	227.
FRUIT MIX, TMT	181.	.7	.2	18.	25.	.7	2.	304.	0.	1010.	5.	.00	.07	1.4	.00	44.0	182.	227.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	289.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	776.	64.7	70.2	500.	833.	14.9	2669.	2291.	156.	1507.	7.	.81	1.21	17.8	1.21	182.9	1626.	
% OF MRDA	22.	64.7	50.2	62.	104.	83.	44.	122.	45.	30.	12.	50.	64.	85.	55.	40.7	45.	
DINNER																		
BEEF PEPPER STEAK W/RICE, FROZEN	219.	15.1	9.1	0.	0.	.0	801.	0.	37.	0.	0.	.00	.00	.0	.00	38.9	301.	284.
CORN, F.E. WARREN	113.	4.4	6.2	6.	107.	.0	69.	267.	1.	732.	7.	.13	.09	2.2	.42	27.3	164.	145.
CAKE, CHOCOLATE W/FROSTING, F.E. WARREN	16.	3.4	12.3	52.	98.	.7	176.	115.	0.	120.	0.	.01	.07	.1	.04	41.8	277.	75.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	589.	38.0	42.4	411.	507.	2.7	1600.	815.	87.	1349.	10.	.41	.74	4.4	1.34	158.4	1139.	
% OF MRDA	16.	38.0	30.3	51.	63.	15.	26.	43.	25.	27.	16.	26.	39.	21.	61.	35.2	32.	
TOTAL	1931.	144.6	174.1	1446.	2177.	24.0	5867.	4750.	375.	7686.	162.	3.45	3.18	27.2	4.91	447.3	3916.	
% OF MRDA	54.	144.6	124.3	181.	272.	133.	96.	253.	107.	154.	270.	216.	168.	130.	223.	99.4	109.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 13
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
PEARS, TMT	180.	.5	.5	11.	16.	.5	2.	191.	11.	0.	2.	.00	.05	.2	.00	44.3	184.	227.
OMELET, CHEESE, TMT	222.	41.4	15.3	535.	704.	4.6	1382.	313.	39.	3651.	0.	.29	.13	.3	.16	8.5	629.	326.
POPTARTS	5.	3.2	6.8	25.	51.	2.5	127.	96.	9.	0.	7.	.25	.26	2.5	.47	36.2	200.	52.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.3	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	622.	56.4	41.9	928.	1197.	8.3	1893.	1445.	126.	7093.	60.	1.95	.96	3.5	2.65	131.0	1400.	
% OF MRDA	17.	56.4	30.0	116.	150.	46.	31.	77.	36.	142.	99.	122.	51.	16.	130.	29.1	39.	
LUNCH																		
CHICKEN STEW, TMT	251.	27.7	14.7	59.	427.	2.0	913.	965.	62.	4665.	0.	.07	.26	13.7	.33	29.0	359.	326.
CRANBERRY SAUCE	86.	.1	.3	8.	6.	.3	1.	42.	3.	28.	3.	.01	.01	.0	.03	52.1	203.	139.
RICE, DRY	141.	6.1	10.9	41.	116.	3.9	620.	150.	23.	0.	0.	.48	.05	3.6	.07	66.1	388.	227.
BEANS, GREEN, CANNED	156.	2.4	.3	76.	42.	2.5	401.	161.	24.	799.	7.	.05	.09	.5	.07	8.8	41.	170.
PUDDING, CHOCOLATE, TMT	133.	4.1	6.1	41.	179.	3.2	302.	488.	61.	250.	0.	.00	.16	.5	.00	81.5	397.	227.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	1008.	55.6	47.1	578.	1072.	13.7	2791.	2238.	221.	6238.	12.	.87	1.14	20.3	1.37	287.9	1785.	
% OF MRDA	28.	55.6	33.6	72.	134.	76.	46.	119.	63.	125.	20.	54.	60.	97.	62.	64.0	50.	
DINNER																		
TURKEY W/POTATO, PEAS, DESSERT, FROZEN	248.	20.9	11.1	108.	0.	2.3	1108.	574.	0.	2989.	10.	.20	.26	4.6	.00	43.0	359.	326.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	489.	36.0	25.9	460.	301.	4.2	1662.	1006.	49.	3486.	12.	.46	.84	6.6	.88	93.4	756.	
% OF MRDA	14.	36.0	18.5	58.	38.	23.	27.	54.	14.	70.	20.	29.	44.	32.	40.	20.8	21.	
TOTAL	2119.	148.1	114.9	1966.	2570.	26.2	6346.	4689.	396.	16818.	84.	3.28	2.94	30.4	4.90	512.2	3942.	
% OF MRDA	59.	148.1	82.1	246.	321.	146.	104.	250.	113.	336.	140.	205.	155.	145.	223.	113.8	109.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 14
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, CANNED	149.	1.4	.3	17.	31.	.7	2.	338.	20.	340.	68.	.12	.03	.5	.00	19.0	82.	170.
SAUSAGE, FROZEN	20.	10.3	25.2	4.	92.	1.4	546.	153.	9.	0.	0.	.45	.19	2.1	.11	.0	271.	57.
PANCAKES, FROZEN	49.	9.6	4.3	72.	409.	2.1	549.	146.	22.	141.	0.	.26	.36	2.3	.06	49.9	268.	114.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	3.8	7.0	68.	198.	.8	314.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	433.	33.7	49.2	450.	958.	4.9	1479.	1483.	117.	3924.	119.	2.24	1.12	5.4	2.18	111.0	1008.	
% OF MRDA	12.	33.7	35.2	56.	120.	27.	24.	79.	34.	78.	198.	140.	59.	26.	99.	24.7	28.	
LUNCH																		
BEEF, CLASSIC CASSEROLE, FROZEN	250.	26.8	44.0	18.	3.	3.2	1544.	722.	18.	2996.	5.	.50	.45	6.3	.00	60.8	749.	454.
FRUIT & JUICE BAR, FROZEN	53.	1.0	1.0	0.	0.	.0	10.	0.	0.	0.	1.	.00	.00	.0	.00	16.0	70.	71.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	544.	43.0	59.8	371.	305.	5.1	2107.	1154.	67.	3493.	8.	.76	1.03	8.4	.88	127.2	1217.	
% OF MRDA	15.	43.0	42.7	46.	38.	28.	34.	62.	19.	70.	14.	48.	54.	40.	40.	28.3	34.	
DINNER																		
PEACHES, INT	179.	.9	.2	9.	27.	.7	5.	295.	14.	976.	7.	.00	.05	1.4	.00	45.4	188.	227.
COTTAGE CHEESE, DEHYDRATED, B-RATION	45.	7.8	1.1	39.	85.	.1	230.	54.	3.	40.	0.	.01	.09	.1	.05	2.1	51.	57.
SPAGHETTI, INT	246.	33.6	10.1	111.	303.	5.2	1575.	913.	68.	1402.	3.	.20	.39	7.5	.39	29.3	346.	326.
BEANS, GREEN, CANNED	156.	2.4	.3	76.	42.	2.5	401.	161.	24.	799.	7.	.05	.09	.5	.07	8.8	41.	170.
GRANOLA BAR, CHOCOLATE CHIP	4.	3.9	10.1	32.	0.	.4	190.	150.	0.	0.	0.	.11	.06	.0	.00	38.1	260.	56.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	871.	63.7	36.6	620.	760.	10.9	2954.	2006.	158.	3714.	19.	.63	1.24	11.6	1.39	174.1	1283.	
% OF MRDA	24.	63.7	26.2	77.	95.	60.	48.	107.	45.	74.	32.	40.	65.	55.	63.	38.7	36.	
TOTAL	1848.	139.3	145.6	1440.	2022.	20.8	6541.	4643.	342.	11130.	146.	3.63	3.39	25.3	4.45	412.2	3508.	
% OF MRDA	51.	139.3	104.0	180.	253.	116.	107.	248.	98.	223.	244.	227.	178.	120.	202.	91.6	97.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-1. (Cont'd)

MENU ANALYSIS SUMMARY
DATE: 1 April 87
DAY: 1 - 14
MEAL: BREAKFAST, LUNCH, & DINNER

TOTAL	H20	PROT	FAT	Ca	P	Fe	Na	K	Mg	Vit A	C	B1	B2	NIAC	B6	CARBO	KCAL
1	1838.	150.8	116.1	2103.	2744.	16.2	5501.	3262.	398.	11501.	84.	2.89	2.76	18.8	4.39	342.3	3296.
2	2369.	155.1	152.6	1418.	2339.	20.6	6293.	5397.	462.	34880.	86.	3.57	3.01	37.6	4.91	516.0	4393.
3	1844.	116.7	143.4	1431.	1680.	15.4	5216.	3429.	427.	6107.	183.	3.25	3.06	20.0	4.18	370.5	3230.
4	2014.	135.6	132.7	1761.	2358.	15.6	6131.	3575.	348.	35804.	82.	3.11	2.56	20.8	4.49	367.4	3473.
5	1742.	130.1	160.8	1677.	2239.	21.6	5702.	4722.	369.	14185.	166.	3.30	3.18	25.8	4.87	385.2	3506.
6	1916.	158.9	134.4	1831.	2728.	24.4	5652.	4257.	412.	10622.	106.	3.38	2.92	22.4	4.95	407.6	3787.
7	1897.	161.2	123.7	1796.	2348.	19.3	5893.	3569.	442.	9897.	146.	3.29	2.69	22.9	4.32	370.8	3527.
8	1981.	145.6	140.9	1957.	2207.	22.8	6030.	3892.	375.	13283.	125.	3.58	3.32	18.9	4.51	408.9	3732.
9	2240.	131.5	140.3	1575.	2410.	22.8	6174.	5231.	459.	11937.	186.	3.61	3.36	39.9	5.55	558.9	4002.
10	1695.	138.0	152.5	1786.	1793.	16.8	6105.	3147.	338.	12643.	74.	3.07	2.98	18.7	3.95	400.2	3818.
11	2103.	156.0	122.1	1835.	2663.	23.4	6230.	4033.	468.	10995.	157.	3.49	2.89	24.7	5.00	428.2	3702.
12	1931.	144.6	174.1	1446.	2177.	24.0	5867.	4750.	375.	7686.	162.	3.45	3.18	27.2	4.91	447.3	3916.
13	2119.	148.1	114.9	1966.	2570.	26.2	6346.	4689.	396.	16818.	84.	3.38	2.94	30.4	4.90	512.2	3942.
14	1848.	139.3	145.6	1440.	2022.	20.8	6541.	4643.	342.	11130.	146.	3.63	3.39	25.3	4.45	412.2	3508.
MEAN	1967.	143.7	139.6	1716.	2306.	20.7	5977.	4185.	401.	14821.	128.	3.35	3.01	25.2	4.67	423.4	3702.

MENU ANALYSIS
DATE: 1 April 87
DAY: 1
MEALS: BREAKFAST, LUNCH, & DINNER

TABLE B-2. Nutritional Analysis of Alternative Menu Selections.

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, CANNED	149.	1.4	.3	17.	31.	.7	2.	338.	20.	340.	68.	.12	.03	.5	.00	19.0	82.	170.
CEREAL, COLD, DRY	1.	2.2	.1	5.	13.	.4	281.	34.	3.	0.	0.	.12	.02	.6	.02	23.9	108.	28.
BEEF, CREAMED GROUND, TMT	243.	38.5	26.4	26.	267.	5.5	1079.	590.	42.	0.	0.	.03	.36	6.2	.13	14.3	447.	326.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	634.	60.1	48.6	468.	810.	9.3	2130.	1887.	149.	3782.	119.	1.87	1.10	9.6	2.20	137.6	1229.	
% OF MRDA	18.	60.1	34.7	59.	101.	52.	35.	101.	43.	76.	198.	117.	58.	46.	100.	30.6	34.	
LUNCH																		
BURRITO, BEEF & BACON, FROZEN	148.	46.0	32.1	128.	443.	7.1	503.	491.	54.	2570.	23.	.45	.60	10.8	.00	56.8	716.	284.
ESKIMO PIE, FROZEN	40.	2.9	19.0	99.	76.	.0	43.	152.	16.	263.	0.	.02	.13	.8	.03	21.9	180.	85.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
SUBTOTAL	401.	57.4	59.7	515.	746.	7.1	668.	995.	102.	3174.	25.	.54	1.14	11.8	.89	90.7	1054.	
% OF MRDA	11.	57.4	42.6	64.	93.	39.	11.	53.	29.	63.	42.	34.	60.	56.	40.	20.2	29.	
DINNER																		
BEEF PEPPER STEAK, TMT	243.	57.0	15.6	20.	0.	7.8	841.	600.	59.	0.	0.	.07	.49	8.5	.26	6.5	398.	326.
POTATO, INSTANT, MASHED	90.	3.0	7.0	35.	54.	.3	380.	328.	19.	148.	6.	.05	.05	1.0	.11	17.0	140.	114.
CARROTS, CANNED	155.	1.4	.5	51.	37.	1.2	401.	204.	8.	25500.	3.	.03	.05	.7	.05	11.4	51.	170.
COOKIE BAR, ICED DUTCH APPLE	4.	2.6	5.2	12.	46.	1.5	185.	54.	7.	430.	0.	.13	.15	1.7	.17	31.0	181.	43.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	733.	79.1	43.1	471.	438.	12.8	2361.	1619.	142.	26575.	12.	.54	1.31	14.0	1.48	116.2	1167.	
% OF MRDA	20.	79.1	30.8	59.	55.	71.	39.	86.	41.	531.	19.	34.	69.	67.	67.	25.8	32.	
TOTAL	1769.	196.6	151.4	1454.	1994.	29.2	5158.	4500.	393.	33532.	155.	2.95	3.55	35.3	4.57	344.5	3450.	
% OF MRDA	49.	196.6	108.1	182.	249.	162.	84.	240.	112.	671.	259.	184.	187.	168.	208.	76.6	96.	
MRDA *	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

*Military Recommended Dietary Allowances. For water requirements, AFR 160-95 recommends a minimum of 1 milliliter of water per calorie expended. However, water requirements may increase 50 to 100 percent depending on hot climate and/or expending high levels of energy. Even in cold climates, heavy physical activity with sweating in insulated clothes will increase water needs. In addition, diets high in salt and protein will increase water requirements.

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 2
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, GRAPEFRUIT, ASEPTIC	225.	1.2	.3	22.	37.	.5	3.	405.	27.	200.	95.	.10	.05	.5	.10	23.0	98.	250.
CEREAL, COLD, DRY	1.	2.2	.1	5.	13.	.4	281.	34.	3.	0.	0.	.12	.02	.6	.02	23.9	108.	28.
FRENCH TOAST W/SAUSAGE, FROZEN	105.	16.9	25.9	79.	0.	2.6	791.	0.	0.	0.	0.	.48	.40	3.7	.00	36.1	451.	184.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	546.	31.8	45.7	463.	476.	4.3	1457.	1284.	97.	3642.	146.	2.11	1.00	5.2	2.13	124.9	1043.	
% OF MRDA	15.	31.8	32.6	58.	60.	24.	24.	68.	28.	73.	243.	132.	53.	25.	97.	27.8	29.	
LUNCH																		
BEEF STEW, TMT	243.	43.7	14.3	49.	297.	4.9	1500.	861.	62.	3032.	7.	.07	.36	4.9	.39	19.2	381.	326.
BEANS, WAX, CANNED	157.	2.4	.5	76.	42.	2.5	401.	161.	24.	170.	8.	.05	.09	.5	.07	8.8	41.	170.
PUDDING, CHOCOLATE, TMT	133.	4.1	6.1	41.	179.	3.2	302.	488.	61.	250.	0.	.00	.16	.5	.00	81.5	397.	227.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	774.	65.3	35.8	519.	820.	12.5	2756.	1942.	196.	3948.	17.	.38	1.18	7.9	1.34	159.9	1217.	
% OF MRDA	22.	65.3	25.5	65.	102.	70.	45.	104.	56.	79.	29.	24.	62.	38.	61.	35.5	34.	
DINNER																		
PEACHES, TMT	179.	.9	.2	9.	27.	.7	5.	295.	14.	976.	2.	.00	.05	1.4	.00	45.4	188.	227.
SPAGHETTI, TMT	246.	33.6	10.1	111.	303.	5.2	1575.	913.	68.	1402.	3.	.20	.39	7.5	.39	29.3	346.	326.
BEANS, GREEN, CANNED	156.	2.4	.3	76.	42.	2.5	401.	161.	24.	799.	7.	.05	.09	.5	.07	8.8	41.	170.
GRANOLA BAR, CHOCOLATE CHIP	4.	3.9	10.1	32.	0.	.4	190.	150.	0.	0.	0.	.11	.06	.0	.00	38.1	260.	56.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	827.	56.0	35.5	581.	674.	10.7	2724.	1952.	154.	3674.	19.	.62	1.16	11.4	1.34	172.0	1232.	
% OF MRDA	23.	56.0	25.4	73.	84.	60.	45.	104.	44.	73.	32.	39.	61.	54.	61.	38.2	34.	
TOTAL	2147.	153.1	117.0	1563.	1970.	27.5	6937.	5178.	447.	11264.	182.	3.11	3.34	24.6	4.82	456.9	3492.	
% OF MRDA	60.	153.1	83.5	195.	246.	153.	113.	276.	128.	225.	304.	194.	176.	117.	219.	101.5	97.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 3
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, ASEPTIC	219.	2.0	.5	25.	45.	1.0	3.	497.	30.	500.	100.	.17	.05	.8	.00	28.0	120.	250.
CEREAL, COLD, DRY	1.	2.2	.1	5.	13.	.4	281.	34.	3.	0.	0.	.12	.02	.6	.02	23.9	108.	28.
EGG, CANADIAN BACON, CHEESE ON ENG MUFFIN, FZN	76.	21.0	24.0	176.	0.	2.2	706.	0.	31.	0.	2.	.21	.35	4.0	.00	23.1	400.	147.
POTATO PATTY, SHREDDED, FROZEN	60.	4.1	9.6	10.	98.	2.1	269.	743.	25.	0.	24.	.16	.02	3.0	.00	38.4	251.	114.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	572.	40.7	53.5	573.	582.	6.5	1641.	2120.	156.	3942.	176.	2.07	.97	8.7	2.03	155.4	1266.	
% OF MRDA	16.	40.7	38.2	72.	73.	36.	27.	113.	44.	79.	294.	129.	51.	42.	92.	34.5	35.	
LUNCH																		
LASAGNA, THREE CHEESE, FROZEN	196.	21.9	17.0	349.	0.	2.6	761.	551.	48.	954.	0.	.23	.26	2.8	.00	38.1	400.	284.
VEGETABLES, MIXED, F.E. WARREN	90.	3.3	36.4	39.	61.	.9	460.	189.	23.	4726.	3.	.07	.14	.9	.14	13.5	383.	145.
CAKE, CHOCOLATE W/FROSTING, F.E. WARREN	16.	3.4	12.3	52.	98.	.7	176.	115.	0.	120.	0.	.01	.07	.1	.04	41.8	277.	75.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	544.	43.8	80.5	794.	461.	6.1	1951.	1287.	120.	6296.	5.	.58	1.05	5.9	1.07	143.7	1457.	
% OF MRDA	15.	43.8	57.5	99.	58.	34.	32.	69.	34.	126.	9.	36.	55.	28.	48.	31.9	40.	
DINNER																		
SCALLOPS & SHRIMP MARINARA W/RICE, FROZEN	215.	21.0	18.0	47.	0.	1.7	850.	300.	96.	570.	12.	.23	.00	3.2	.00	34.9	390.	291.
CORN, F.E. WARREN	113.	4.4	6.2	6.	107.	.0	69.	267.	1.	732.	7.	.13	.09	2.2	.42	27.3	164.	145.
ICE CREAM SANDWICH, FROZEN	30.	3.5	7.1	84.	92.	.1	105.	116.	8.	221.	0.	.02	.11	.6	.02	29.8	198.	71.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	599.	44.0	46.2	489.	491.	3.8	1577.	1115.	154.	2020.	21.	.65	.78	8.0	1.33	142.4	1149.	
% OF MRDA	17.	44.0	33.0	61.	61.	21.	26.	59.	44.	40.	36.	40.	41.	38.	60.	31.6	32.	
TOTAL	1715.	128.5	180.2	1856.	1533.	16.3	5169.	4522.	429.	12259.	203.	3.29	2.80	22.7	4.43	441.5	3873.	
% OF MRDA	48.	128.5	128.7	232.	192.	91.	84.	241.	123.	245.	338.	206.	147.	108.	201.	98.1	108.	
MRDA	3600.	100.	140.	800.	900.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 4
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, INSTANT	200.	1.4	.5	23.	36.	.5	2.	474.	0.	454.	100.	.18	.07	.9	.00	24.5	104.	227.
CEREAL, COLD, DRY	1.	2.2	.1	5.	13.	.4	281.	34.	3.	0.	0.	.12	.02	.6	.02	23.9	108.	28.
BEEF, CREAMED GROUND, TMT	243.	38.5	26.4	26.	267.	5.5	1079.	590.	42.	0.	0.	.03	.36	6.2	.13	14.3	447.	326.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	686.	60.1	48.8	474.	816.	9.1	2130.	2023.	129.	3896.	150.	1.93	1.14	10.0	2.20	143.1	1251.	
% OF MRDA	19.	60.1	34.8	59.	102.	51.	35.	108.	37.	78.	251.	121.	60.	47.	100.	31.8	35.	
LUNCH																		
ITALIANO HOT POCKET, FROZEN	193.	15.1	24.1	0.	0.	.0	1497.	0.	62.	0.	0.	.00	.00	7.7	.00	50.8	866.	284.
SUNDAE CUP, FROZEN	54.	3.8	9.0	124.	98.	.1	54.	154.	11.	374.	1.	.03	.18	.1	.03	17.7	164.	85.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
SUBTOTAL	460.	27.4	41.7	412.	325.	.1	1672.	505.	105.	716.	3.	.11	.59	8.0	.89	80.5	1189.	
% OF MRDA	13.	27.4	29.8	52.	41.	0.	27.	27.	30.	14.	5.	7.	31.	38.	40.	17.9	33.	
DINNER																		
BEEF STEW, TMT	243.	43.7	14.3	49.	297.	4.9	1500.	861.	62.	3032.	7.	.07	.36	4.9	.39	19.2	381.	326.
BEANS, WAX, CANNED	157.	2.4	.5	76.	42.	2.5	401.	161.	24.	170.	8.	.05	.09	.5	.07	8.8	41.	170.
PUDDING, CHOCOLATE, TMT	133.	4.1	6.1	41.	179.	3.2	302.	488.	61.	250.	0.	.00	.16	.5	.00	81.5	397.	227.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	774.	65.3	35.8	519.	820.	12.5	2756.	1942.	196.	3948.	17.	.38	1.18	7.9	1.34	159.9	1217.	
% OF MRDA	22.	65.3	25.5	65.	102.	70.	45.	104.	56.	79.	29.	24.	62.	38.	61.	35.5	34.	
TOTAL	1920.	152.8	126.2	1405.	1960.	21.7	6559.	4471.	430.	8560.	171.	2.42	2.91	25.9	4.43	383.5	3657.	
% OF MRDA	53.	152.8	90.2	176.	245.	121.	107.	238.	123.	171.	285.	151.	153.	123.	201.	85.2	102.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 5
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, PINEAPPLE, ASEPTIC	214.	1.0	.3	37.	22.	.8	3.	372.	30.	125.	22.	.12	.05	.5	.22	33.8	138.	250.
CEREAL, HOT, OATMEAL	163.	3.8	1.9	17.	108.	1.1	401.	115.	40.	0.	0.	.15	.04	.2	.00	18.3	104.	189.
EGG OMELETTE HOT POCKET, FROZEN	199.	21.3	21.3	0.	0.	.0	1085.	0.	0.	0.	0.	.00	.00	.0	.00	41.5	801.	284.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	791.	37.5	42.8	411.	556.	2.7	1870.	1333.	136.	3567.	73.	1.68	.61	1.1	2.24	135.5	1429.	
% OF MRDA	22.	37.5	30.6	51.	70.	15.	31.	71.	39.	71.	122.	105.	32.	5.	102.	30.1	40.	
LUNCH																		
BURRITO, BEEF & BACON, FROZEN	148.	46.0	32.1	128.	443.	7.1	503.	491.	54.	2570.	23.	.45	.60	10.8	.00	56.8	716.	284.
ESKIMO PIE, FROZEN	40.	2.9	19.0	99.	76.	.0	43.	152.	16.	263.	0.	.02	.13	.8	.03	21.9	180.	85.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
SUBTOTAL	401.	57.4	59.7	515.	746.	7.1	668.	995.	102.	3174.	25.	.54	1.14	11.8	.89	90.7	1054.	
% OF MRDA	11.	57.4	42.6	64.	93.	39.	11.	53.	29.	63.	42.	34.	60.	56.	40.	20.2	29.	
DINNER																		
CHICKEN ALA KING, TMT	239.	53.1	18.3	39.	378.	3.6	942.	685.	65.	0.	0.	.03	.39	14.0	.20	11.7	424.	326.
RICE, DRY	141.	6.1	10.9	41.	116.	3.9	620.	150.	23.	0.	0.	.48	.05	3.6	.07	66.1	388.	227.
PEAS, CANNED	144.	5.8	.5	32.	99.	2.5	401.	163.	29.	765.	15.	.19	.10	1.7	.00	17.7	97.	170.
PUDDING, BUTTERSCOTCH	87.	1.5	3.3	76.	88.	.1	237.	88.	12.	15.	1.	.02	.13	.1	.00	28.6	151.	121.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	852.	81.7	47.7	541.	982.	12.0	2754.	1518.	177.	1276.	19.	.98	1.25	21.5	1.15	174.4	1458.	
% OF MRDA	24.	81.7	34.1	68.	123.	67.	45.	81.	51.	26.	32.	61.	66.	103.	52.	38.8	40.	
TOTAL	2044.	176.6	150.2	1468.	2284.	21.8	5292.	3846.	416.	8018.	117.	3.21	3.00	34.5	4.28	400.6	3941.	
% OF MRDA	57.	176.6	107.3	183.	285.	121.	86.	205.	119.	160.	195.	201.	158.	164.	194.	89.0	109.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 6
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, ASEPTIC	219.	2.0	.5	25.	45.	1.0	3.	497.	30.	500.	100.	.17	.05	.8	.00	28.0	120.	250.
CEREAL, HOT, CREAM OF WHEAT	142.	5.3	.5	16.	146.	1.6	192.	0.	9.	0.	0.	.12	.04	.0	.00	28.7	100.	178.
BEEF, CREAMED GROUND, TMT	243.	38.5	26.4	26.	267.	5.5	1079.	590.	42.	0.	0.	.03	.36	6.2	.13	14.3	447.	326.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	846.	63.8	49.2	488.	958.	10.9	2031.	2013.	165.	3942.	151.	1.93	1.13	9.2	2.18	151.4	1259.	
% OF MRDA	23.	63.8	35.2	61.	120.	60.	33.	107.	47.	79.	251.	121.	59.	44.	99.	33.6	35.	
LUNCH																		
HAM SLICES, TMT	96.	29.9	6.1	8.	411.	1.6	1559.	465.	31.	0.	0.	.33	.30	5.8	.24	.0	174.	136.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
THREE BEAN SALAD, JAR	128.	4.6	9.3	51.	88.	2.2	433.	235.	29.	190.	3.	.05	.05	.7	.00	26.7	199.	170.
APPLE DESSERT, TMT	156.	.5	2.7	11.	14.	1.6	193.	129.	7.	0.	0.	.02	.09	.2	.05	66.5	293.	227.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	622.	50.1	33.0	423.	814.	7.3	2739.	1261.	116.	687.	6.	.66	1.02	8.8	1.17	143.6	1063.	
% OF MRDA	17.	50.1	23.6	53.	102.	41.	45.	67.	33.	14.	10.	41.	53.	42.	53.	31.9	30.	
DINNER																		
SCALLOPS & SHRIMP MARINARA W/RICE, FROZEN	215.	21.0	18.0	47.	0.	1.7	850.	300.	96.	570.	12.	.23	.00	3.2	.00	34.9	390.	291.
CORN, F.E. WARREN	113.	4.4	6.2	6.	107.	.0	69.	267.	1.	732.	7.	.13	.09	2.2	.42	27.3	164.	145.
ICE CREAM SANDWICH, FROZEN	30.	3.5	7.1	84.	82.	.1	105.	116.	8.	221.	0.	.02	.11	.6	.02	29.8	198.	71.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	599.	44.0	46.2	489.	491.	3.8	1577.	1115.	154.	2020.	21.	.65	.78	8.0	1.33	142.4	1149.	
% OF MRDA	17.	44.0	33.0	61.	61.	21.	26.	59.	44.	40.	36.	40.	41.	38.	60.	31.6	32.	
TOTAL	2066.	158.0	128.4	1400.	2263.	22.0	6346.	4389.	434.	6649.	178.	3.24	2.92	26.1	4.68	437.3	3471.	
% OF MRDA	57.	158.0	91.7	175.	283.	122.	104.	234.	124.	133.	296.	202.	154.	124.	213.	97.2	96.	
MRDA	3600.	100.	140.	800.	800.	18.	6130.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 7
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, INSTANT	200.	1.4	.5	23.	36.	.5	2.	474.	0.	454.	100.	.18	.07	.9	.00	24.5	104.	227.
CEREAL, COLD, DRY	1.	2.2	.1	5.	13.	.4	281.	34.	3.	0.	0.	.12	.02	.6	.02	23.9	108.	28.
BEEF, CREAMED GROUND, TNT	243.	38.5	26.4	26.	267.	5.5	1079.	590.	42.	0.	0.	.03	.36	6.2	.13	14.3	447.	326.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, ARE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	686.	60.1	48.8	474.	816.	9.1	2130.	2023.	129.	3896.	150.	1.93	1.14	10.0	2.20	143.1	1251.	
% OF MRDA	19.	60.1	34.9	59.	102.	51.	35.	108.	37.	78.	251.	121.	60.	47.	100.	31.8	35.	
LUNCH																		
LASAGNA, THREE CHEESE, FROZEN	196.	21.9	17.0	349.	0.	2.6	761.	551.	48.	954.	0.	.23	.26	2.8	.00	38.1	400.	284.
VEGETABLES, MIXED, F.E. WARREN	90.	3.3	36.4	39.	61.	.9	460.	189.	23.	4726.	3.	.07	.14	.9	.14	13.5	383.	145.
CAKE, WHITE, F.E. WARREN	18.	3.4	10.4	48.	77.	.3	225.	59.	5.	127.	0.	.01	.07	.1	.01	41.9	273.	75.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	546.	43.8	78.6	789.	439.	5.6	1999.	1231.	125.	6304.	5.	.58	1.04	5.9	1.04	143.8	1454.	
% OF MRDA	15.	43.8	56.2	99.	55.	31.	33.	66.	36.	126.	9.	36.	55.	28.	47.	32.0	40.	
DINNER																		
BEEF PEPPER STEAK, TNT	243.	57.0	15.6	20.	0.	7.8	841.	600.	59.	0.	0.	.07	.49	8.5	.26	6.5	398.	326.
POTATO, INSTANT, MASHED	90.	3.0	7.0	35.	54.	.3	380.	328.	19.	140.	6.	.05	.05	1.0	.11	17.0	140.	114.
CARROTS, CANNED	155.	1.4	.5	51.	37.	1.2	401.	204.	8.	25500.	3.	.03	.05	.7	.05	11.4	51.	170.
PUDDING, BUTTERSCOTCH	87.	1.5	3.3	76.	80.	.1	237.	86.	12.	15.	1.	.02	.13	.1	.00	28.6	151.	121.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	289.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	816.	78.0	41.2	535.	481.	11.4	2413.	1653.	147.	26159.	13.	.43	1.29	12.4	1.31	113.8	1138.	
% OF MRDA	23.	78.0	29.4	67.	60.	63.	39.	88.	42.	523.	21.	27.	68.	59.	60.	25.3	32.	
TOTAL	2048.	181.8	168.6	1798.	1735.	26.1	6542.	4907.	401.	36360.	169.	2.94	3.47	28.3	4.54	400.7	3843.	
% OF MRDA	57.	181.8	120.4	225.	217.	145.	107.	262.	114.	727.	281.	184.	183.	135.	206.	89.1	107.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 8
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, CANNED	149.	1.4	.3	17.	31.	.7	2.	338.	20.	340.	68.	.12	.03	.5	.00	19.0	82.	170.
CEREAL, HOT, CREAM OF WHEAT	142.	5.3	.5	16.	146.	1.6	182.	0.	9.	0.	0.	.12	.04	.0	.00	28.7	100.	178.
BEEF, CREAMED GROUND, TMT	243.	38.5	26.4	26.	267.	5.5	1079.	590.	42.	0.	0.	.03	.36	6.2	.13	14.3	447.	326.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	776.	63.2	49.1	480.	944.	10.5	2030.	1853.	155.	3782.	119.	1.87	1.11	9.0	2.18	142.4	1220.	
% OF MRDA	22.	63.2	35.0	60.	118.	59.	33.	99.	44.	76.	198.	117.	59.	43.	99.	31.6	34.	
LUNCH																		
ITALIANO HOT POCKET, FROZEN	193.	15.1	24.1	0.	0.	.0	1497.	0.	62.	0.	0.	.00	.00	7.7	.00	50.8	866.	284.
SUNDAE CUP, FROZEN	54.	3.8	9.0	124.	98.	.1	54.	154.	11.	374.	1.	.03	.18	.1	.03	17.7	164.	85.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
SUBTOTAL	460.	27.4	41.7	412.	325.	.1	1672.	505.	105.	716.	3.	.11	.59	8.0	.89	80.5	1189.	
% OF MRDA	13.	27.4	29.8	52.	41.	0.	27.	27.	30.	14.	5.	7.	31.	38.	40.	17.9	33.	
DINNER																		
BEEF TIPS W/BBQ SAUCE, F.E. WARREN	160.	26.1	22.7	39.	238.	4.1	1146.	245.	20.	531.	7.	.09	.20	5.1	.00	11.3	347.	227.
POTATO AU GRATIN, F.E. WARREN	105.	7.2	10.7	169.	160.	.9	562.	160.	28.	375.	14.	.09	.17	1.4	.24	16.0	187.	142.
VEGETABLES, MIXED, F.E. WARREN	90.	3.3	36.4	39.	61.	.9	460.	189.	23.	4726.	3.	.07	.14	.9	.14	13.5	383.	145.
CAKE, CHOCOLATE W/FROSTING, F.E. WARREN	16.	3.4	12.3	52.	98.	.7	176.	115.	0.	120.	0.	.01	.07	.1	.04	41.8	277.	75.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	613.	55.2	96.8	652.	859.	8.5	2898.	1142.	121.	6248.	26.	.53	1.17	9.6	1.31	133.1	1592.	
% OF MRDA	17.	55.2	69.2	81.	107.	47.	47.	61.	34.	125.	44.	33.	62.	46.	59.	29.6	44.	
TOTAL	1849.	145.8	187.6	1544.	2128.	19.1	6600.	3500.	381.	10746.	148.	2.51	2.88	26.6	4.37	356.0	4001.	
% OF MRDA	51.	145.8	134.0	193.	266.	106.	108.	187.	109.	215.	247.	157.	151.	127.	199.	79.1	111.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 9
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, PINEAPPLE, ASEPTIC	214.	1.0	.3	37.	22.	.8	3.	372.	30.	125.	22.	.12	.05	.5	.22	33.8	138.	250.
BEEFSTEAK, EGG, CHEESE ON ENGLISH MUFFIN, FZN	76.	21.0	24.0	176.	0.	2.2	706.	0.	32.	0.	2.	.21	.35	4.0	.00	23.1	400.	147.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	506.	33.4	43.6	571.	448.	3.8	1090.	1218.	129.	3567.	75.	1.74	.93	4.9	2.24	98.8	924.	
% OF MRDA	14.	33.4	31.1	71.	56.	21.	18.	65.	37.	71.	125.	109.	49.	23.	102.	22.0	26.	
LUNCH																		
HAM SLICES, TMT	96.	29.9	6.1	8.	411.	1.6	1559.	465.	31.	0.	0.	.33	.30	5.8	.24	.0	174.	126.
POTATO AU GRATIN, TMT	186.	5.7	8.6	68.	91.	1.6	592.	563.	39.	1278.	0.	.00	.05	3.9	.09	23.4	193.	227.
CARROTS, CANNED	155.	1.4	.5	51.	37.	1.2	401.	204.	8.	25500.	3.	.03	.05	.7	.05	11.4	51.	170.
APPLESAUCE, CANNED	172.	.5	.2	9.	11.	1.1	5.	148.	11.	91.	2.	.05	.02	.0	.07	54.0	207.	227.
COOKIE BAR, FIG	8.	2.3	3.2	45.	35.	.6	146.	115.	18.	64.	0.	.02	.04	.2	.00	43.7	208.	58.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	858.	54.9	33.5	534.	886.	8.0	3257.	1927.	156.	27429.	8.	.69	1.03	12.6	1.34	182.9	1230.	
% OF MRDA	24.	54.9	23.9	67.	111.	45.	53.	103.	45.	549.	14.	43.	54.	60.	61.	40.6	34.	
DINNER																		
ROAST BEEF, F.E. WARREN	161.	37.0	16.3	20.	318.	4.8	125.	511.	32.	34.	0.	.11	.30	6.6	.02	5.4	352.	227.
RICE, F.E. WARREN	82.	2.3	.1	11.	32.	1.0	423.	32.	9.	0.	0.	.12	.00	1.1	.00	27.3	123.	113.
VEGETABLES, MIXED, F.E. WARREN	90.	3.3	36.4	39.	61.	.9	460.	189.	23.	4726.	3.	.07	.14	.9	.14	13.5	383.	145.
CAKE, WHITE, F.E. WARREN	18.	3.4	10.4	48.	77.	.3	225.	59.	5.	127.	0.	.01	.07	.1	.01	41.9	273.	75.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	593.	61.2	78.1	472.	788.	8.9	1786.	1222.	117.	5384.	5.	.59	1.08	10.8	1.06	138.6	1528.	
% OF MRDA	16.	61.2	55.8	59.	99.	49.	29.	65.	33.	108.	9.	37.	57.	51.	48.	30.8	42.	
TOTAL	1956.	149.4	155.1	1577.	2123.	20.7	6133.	4367.	402.	36380.	88.	3.02	3.04	28.4	4.64	420.3	3682.	
% OF MRDA	54.	149.4	110.8	197.	265.	115.	100.	233.	115.	728.	147.	189.	160.	135.	211.	93.4	102.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 10
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, INSTANT	200.	1.4	.5	23.	36.	.5	2.	474.	0.	454.	100.	.18	.07	.9	.00	24.5	104.	227.
CEREAL, COLD, DRY	1.	2.2	.1	5.	13.	.4	281.	34.	3.	0.	0.	.12	.02	.6	.02	23.9	108.	28.
BEEF, CREAMED GROUND, TMT	243.	38.5	26.4	26.	267.	5.5	1079.	590.	42.	0.	0.	.03	.36	6.2	.13	14.3	447.	326.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	686.	60.1	48.8	474.	816.	9.1	2130.	2023.	129.	3896.	150.	1.93	1.14	10.0	2.20	143.1	1251.	
% OF MRDA	19.	60.1	34.8	59.	102.	51.	35.	108.	37.	78.	251.	121.	60.	47.	100.	31.8	35.	
LUNCH																		
CHICKEN, FRIED, F.E. WARREN	53.	22.4	26.6	35.	130.	2.5	312.	171.	18.	58.	0.	.11	.27	5.1	.24	9.8	373.	113.
POTATO, MASHED, F.E. WARREN	124.	3.3	6.7	37.	75.	.6	360.	390.	34.	265.	14.	.12	.08	1.6	.14	19.2	147.	156.
CORN, F.E. WARREN	113.	4.4	6.2	6.	107.	.0	69.	267.	1.	732.	7.	.13	.09	2.2	.42	27.3	164.	145.
CAKE, YELLOW W/FROSTING, F.E. WARREN	16.	3.1	9.8	51.	84.	.5	156.	81.	14.	120.	0.	.01	.06	.1	.02	45.3	274.	75.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	547.	48.3	64.0	482.	697.	5.5	1451.	1341.	116.	1672.	24.	.65	1.07	11.1	1.71	151.9	1355.	
% OF MRDA	15.	48.3	45.7	60.	87.	30.	24.	72.	33.	33.	40.	40.	56.	53.	78.	33.8	38.	
DINNER																		
BEEF SHORT RIBS W/POTATO, VEGETABLE, FROZEN	212.	25.0	25.9	119.	0.	2.1	1180.	870.	57.	751.	9.	.09	.33	2.7	.00	33.1	459.	298.
ICE CREAM SANDWICH, FROZEN	30.	3.5	7.1	84.	82.	.1	105.	116.	8.	221.	0.	.02	.11	.6	.02	29.8	198.	71.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	482.	43.8	47.8	556.	384.	4.1	1839.	1419.	113.	1468.	11.	.37	1.02	5.3	.91	113.3	1054.	
% OF MRDA	13.	43.8	34.1	69.	48.	23.	30.	76.	32.	29.	19.	23.	53.	25.	41.	25.2	29.	
TOTAL	1715.	152.2	160.6	1512.	1897.	18.7	5420.	4783.	358.	7036.	186.	2.95	3.22	26.4	4.81	408.3	3660.	
% OF MRDA	48.	152.2	114.7	189.	237.	104.	89.	255.	102.	141.	309.	184.	170.	126.	218.	90.7	102.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 11
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, CANNED	149.	1.4	.3	17.	31.	.7	2.	338.	20.	340.	68.	.12	.03	.5	.00	19.0	82.	170.
BEEF, CREAMED GROUND, TMT	243.	38.5	26.4	26.	267.	5.5	1079.	590.	42.	0.	0.	.03	.36	6.2	.13	14.3	447.	326.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	633.	57.8	48.5	464.	798.	8.9	1848.	1853.	146.	3782.	119.	1.75	1.08	9.0	2.18	113.8	1120.	
% OF MRDA	18.	57.8	34.7	58.	100.	50.	30.	99.	42.	76.	198.	109.	57.	43.	99.	25.3	31.	
LUNCH																		
HAM SLICES, TMT	96.	29.9	6.1	8.	411.	1.6	1559.	465.	31.	0.	0.	.33	.30	5.8	.24	.0	174.	136.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
FRUIT MIX, TMT	181.	.7	.2	18.	25.	.7	2.	304.	0.	1010.	5.	.00	.07	1.4	.00	44.0	182.	227.
APPLE DESSERT, TMT	156.	.5	2.7	11.	14.	1.6	193.	129.	7.	0.	0.	.02	.09	.2	.05	66.5	293.	227.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	675.	46.2	23.9	390.	751.	5.8	2307.	1331.	87.	1507.	7.	.61	1.03	9.5	1.17	160.9	1046.	
% OF MRDA	19.	46.2	17.0	49.	94.	32.	38.	71.	25.	30.	12.	38.	54.	45.	53.	35.8	29.	
DINNER																		
BEEF PEPPER STEAK, TMT	243.	57.0	15.6	20.	0.	7.8	841.	600.	59.	0.	0.	.07	.49	8.5	.26	6.5	398.	326.
POTATO, INSTANT, MASHED	90.	3.0	7.0	35.	54.	.3	380.	328.	19.	148.	6.	.05	.05	1.0	.11	17.0	140.	114.
CARROTS, CANNED	155.	1.4	.5	51.	37.	1.2	401.	204.	8.	25500.	3.	.03	.05	.7	.05	11.4	51.	170.
COOKIE BAR, ICED DUTCH APPLE	4.	2.6	5.2	12.	46.	1.5	185.	54.	7.	430.	0.	.13	.15	1.7	.17	31.0	181.	43.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	733.	79.1	43.1	471.	438.	12.8	2361.	1619.	142.	26575.	12.	.54	1.31	14.0	1.48	116.2	1167.	
% OF MRDA	20.	79.1	30.8	59.	55.	71.	39.	86.	41.	531.	19.	34.	69.	67.	67.	25.8	32.	
TOTAL	2041.	183.2	115.4	1325.	1986.	27.5	6516.	4803.	375.	31864.	137.	2.90	3.42	32.5	4.83	390.9	3333.	
% OF MRDA	57.	183.2	82.5	166.	248.	153.	106.	256.	107.	637.	229.	181.	180.	155.	220.	86.9	93.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 12
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, ASEPTIC	219.	2.0	.5	25.	45.	1.0	3.	497.	30.	500.	100.	.17	.05	.8	.00	28.0	120.	250.
CEREAL, COLD, DRY	1.	2.2	.1	5.	13.	.4	281.	34.	3.	0.	0.	.12	.02	.6	.02	23.9	108.	28.
EGG, CANADIAN BACON, CHEESE ON ENG MUFFIN, FZN	76.	21.0	24.0	176.	0.	2.2	706.	0.	31.	0.	2.	.21	.35	4.0	.00	23.1	400.	147.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	314.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	511.	36.6	43.9	563.	484.	4.4	1372.	1376.	131.	3942.	152.	1.91	.95	5.8	2.03	117.0	1015.	
% OF MRDA	14.	36.6	31.4	70.	60.	25.	22.	73.	37.	79.	254.	119.	50.	27.	92.	26.0	28.	
LUNCH																		
CHICKEN ALA KING, TMT	239.	53.1	18.3	39.	378.	3.6	942.	685.	65.	0.	0.	.03	.39	14.0	.20	11.7	424.	326.
RICE, DRY	141.	6.1	10.9	41.	116.	3.9	620.	150.	23.	0.	0.	.48	.05	3.6	.07	66.1	388.	227.
PEAS, CANNED	144.	5.8	.5	32.	99.	2.5	401.	163.	29.	765.	15.	.19	.10	1.7	.00	17.7	97.	170.
PUDDING, BUTTERSCOTCH	87.	1.5	3.3	76.	88.	.1	237.	88.	12.	15.	1.	.02	.13	.1	.00	28.6	151.	121.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	852.	81.7	47.7	541.	982.	12.0	2754.	1518.	177.	1276.	19.	.98	1.25	21.5	1.15	174.4	1458.	
% OF MRDA	24.	81.7	34.1	68.	123.	67.	45.	81.	51.	26.	32.	61.	66.	103.	52.	38.8	40.	
DINNER																		
ENCHILADA, BEEF W/BEANS, VEGETABLE, FROZEN	247.	23.9	8.1	81.	0.	3.7	1439.	832.	0.	0.	22.	.22	.15	5.5	.00	62.9	420.	368.
SUNDAE CUP, FROZEN	54.	3.8	9.0	124.	98.	.1	54.	154.	11.	374.	1.	.03	.18	.1	.03	17.7	164.	85.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	541.	42.9	31.9	558.	399.	5.7	2046.	1418.	60.	871.	25.	.52	.90	7.7	.92	131.0	981.	
% OF MRDA	15.	42.9	22.8	70.	50.	31.	33.	76.	17.	17.	42.	32.	47.	37.	42.	29.1	27.	
TOTAL	1904.	161.2	123.5	1662.	1865.	22.1	6172.	4312.	368.	6089.	197.	3.41	3.10	35.0	4.10	422.3	3454.	
% OF MRDA	53.	161.2	88.2	208.	233.	123.	101.	230.	105.	122.	328.	213.	163.	167.	186.	93.8	96.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 13
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H2O g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, ORANGE, INSTANT	200.	1.4	.5	23.	36.	.5	2.	474.	0.	454.	100.	.18	.07	.9	.00	24.5	104.	227.
BEEF, CREAMED GROUND, TMT	243.	38.5	26.4	26.	267.	5.5	1079.	590.	42.	0.	0.	.03	.36	6.2	.13	14.3	447.	326.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	684.	57.8	48.6	469.	803.	8.7	1849.	1990.	126.	3896.	150.	1.81	1.11	9.4	2.18	119.2	1143.	
% OF MRDA	19.	57.8	34.7	59.	100.	48.	30.	106.	36.	78.	251.	113.	59.	45.	99.	26.5	32.	
LUNCH																		
HAM SLICES, TMT	96.	29.9	6.1	8.	411.	1.6	1559.	465.	31.	0.	0.	.33	.30	5.8	.24	.0	174.	136.
POTATO, INSTANT, MASHED	90.	3.0	7.0	35.	54.	.3	380.	328.	19.	148.	6.	.05	.05	1.0	.11	17.0	140.	114.
CARROTS, CANNED	155.	1.4	.5	51.	37.	1.2	401.	204.	8.	25500.	3.	.03	.05	.7	.05	11.4	51.	170.
APPLESAUCE, CANNED	172.	.5	.2	9.	11.	1.1	5.	148.	11.	91.	2.	.05	.02	.0	.07	54.0	207.	227.
COOKIE BAR, FIG	8.	2.3	3.2	45.	35.	.6	146.	115.	18.	64.	0.	.02	.04	.2	.00	43.7	208.	58.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	762.	52.1	31.8	502.	849.	6.8	3044.	1692.	137.	26300.	14.	.74	1.03	9.8	1.36	176.5	1177.	
% OF MRDA	21.	52.1	22.7	63.	106.	38.	50.	90.	39.	526.	23.	46.	54.	47.	62.	39.2	33.	
DINNER																		
BEEF, SZECHUAN, W/VEGETABLES, NOODLES, FROZEN	240.	20.0	15.0	0.	0.	.0	939.	540.	6.	0.	0.	.00	.00	.0	.00	34.9	368.	312.
CAKE, WHITE, F.E. WARREN	18.	3.4	10.4	48.	77.	.3	225.	59.	5.	127.	0.	.01	.07	.1	.01	41.9	273.	75.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	500.	38.5	40.2	401.	378.	2.2	1718.	1031.	59.	624.	2.	.28	.64	2.2	.89	127.2	1039.	
% OF MRDA	14.	38.5	28.7	50.	47.	12.	28.	55.	17.	12.	4.	17.	34.	11.	41.	28.3	29.	
TOTAL	1946.	148.5	120.7	1372.	2030.	17.7	6610.	4713.	322.	30820.	167.	2.83	2.79	21.4	4.43	422.9	3359.	
% OF MRDA	54.	148.5	86.2	171.	254.	98.	108.	251.	92.	616.	278.	177.	147.	102.	201.	94.0	93.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS
DATE: 1 April 87
DAY: 14
MEALS: BREAKFAST, LUNCH, & DINNER

ITEM	H20 g	PROT g	FAT g	Ca mg	P mg	Fe mg	Na mg	K mg	Mg mg	Vit A I.U.	C mg	B1 mg	B2 mg	NIAC mg	B6 mg	CARBO g	KCAL	GRAMS/ SERVING
BREAKFAST																		
JUICE, PINEAPPLE, ASEPTIC	214.	1.0	.3	37.	22.	.8	3.	372.	30.	125.	22.	.12	.05	.5	.22	33.8	138.	250.
BEEFSTEAK, EGG, CHEESE ON ENGLISH MUFFIN, FZN	76.	21.0	24.0	176.	0.	2.2	706.	0.	32.	0.	2.	.21	.35	4.0	.00	23.1	400.	147.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
COCOA BEVERAGE POWDER, MRE	1.	2.8	7.0	68.	198.	.8	214.	493.	35.	2945.	48.	1.33	.11	.2	1.16	30.0	195.	43.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	506.	33.4	43.6	571.	448.	3.8	1090.	1218.	129.	3567.	75.	1.74	.93	4.9	2.24	98.8	924.	
% OF MRDA	14.	33.4	31.1	71.	56.	21.	18.	65.	37.	71.	125.	109.	49.	23.	102.	22.0	26.	
LUNCH																		
CHICKEN, FRIED, W/POTATO, VEG, DESSERT, FROZEN	199.	27.1	34.5	51.	364.	3.2	1691.	223.	0.	211.	3.	.29	.26	8.6	.00	65.7	679.	319.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	440.	42.3	49.2	404.	665.	5.1	2244.	656.	49.	707.	6.	.55	.83	10.7	.88	116.1	1077.	
% OF MRDA	12.	42.3	35.2	50.	83.	28.	37.	35.	14.	14.	9.	34.	44.	51.	40.	25.8	30.	
DINNER																		
PORK, BBQ, TMT	189.	48.9	50.2	85.	538.	4.9	1229.	1428.	95.	0.	0.	.72	.78	14.0	.39	31.3	773.	326.
RICE, DRY	141.	6.1	10.9	41.	116.	3.9	620.	150.	23.	0.	0.	.48	.05	3.6	.07	66.1	388.	227.
APPLESAUCE, CANNED	172.	.5	.2	9.	11.	1.1	5.	148.	11.	91.	2.	.05	.02	.0	.07	54.0	207.	227.
COOKIE BAR, PEANUT BUTTER, CHOCOLATE COVERED	3.	5.9	14.6	32.	0.	.4	160.	0.	0.	0.	0.	.00	.06	1.5	.00	30.2	280.	54.
BREAD, FROZEN	27.	6.6	2.4	64.	74.	1.9	385.	80.	17.	0.	0.	.19	.16	1.8	.03	38.4	205.	76.
MILK, UHT	213.	8.5	8.5	288.	227.	.0	122.	351.	32.	342.	2.	.07	.41	.2	.85	12.0	159.	244.
BUTTER	1.	.0	3.8	1.	1.	.0	46.	1.	0.	155.	0.	.00	.00	.0	.00	.0	34.	5.
SUBTOTAL	745.	76.6	90.7	519.	966.	12.2	2567.	2157.	177.	588.	5.	1.50	1.49	21.2	1.41	232.0	2045.	
% OF MRDA	21.	76.6	64.8	65.	121.	68.	42.	115.	51.	12.	8.	94.	78.	101.	64.	51.5	57.	
TOTAL	1691.	152.3	183.5	1494.	2080.	21.0	5901.	4031.	355.	4862.	85.	3.79	3.25	36.8	4.54	446.9	4046.	
% OF MRDA	47.	152.3	131.1	187.	260.	117.	96.	215.	101.	97.	142.	237.	171.	175.	206.	99.3	112.	
MRDA	3600.	100.	140.	800.	800.	18.	6120.	1875.	350.	5000.	60.	1.6	1.9	21.	2.2	450.	3600.	

TABLE B-2. (Cont'd)

MENU ANALYSIS SUMMARY
DATE: 1 April 87
DAY: 1 - 14
MEAL: BREAKFAST, LUNCH, & DINNER

TOTAL	H20	PROT	FAT	Ca	P	Fe	Na	K	Mg	Vit A	C	B1	B2	NIAC	B6	CARBO	KCAL
1	1769.	196.6	151.4	1454.	1994.	29.2	5158.	4500.	393.	33532.	155.	2.95	3.55	35.3	4.57	344.5	3450.
2	2147.	153.1	117.0	1563.	1970.	27.5	6937.	5178.	447.	11264.	182.	3.11	3.34	24.6	4.82	456.9	3492.
3	1715.	128.5	180.2	1856.	1533.	16.3	5169.	4522.	429.	12259.	203.	3.29	2.80	22.7	4.43	441.5	3873.
4	1920.	152.8	126.2	1405.	1960.	21.7	6559.	4471.	430.	8560.	171.	2.42	2.91	25.9	4.43	383.5	3657.
5	2044.	176.6	150.2	1468.	2284.	21.8	5292.	3846.	416.	8018.	117.	3.21	3.00	34.5	4.28	400.6	3941.
6	2066.	158.0	128.4	1400.	2263.	22.0	6346.	4389.	434.	6649.	178.	3.24	2.92	26.1	4.68	437.3	3471.
7	2048.	181.8	168.6	1798.	1735.	26.1	6542.	4907.	401.	36360.	169.	2.94	3.47	28.3	4.54	400.7	3843.
8	1849.	145.8	187.6	1544.	2128.	19.1	6600.	3500.	381.	10746.	148.	2.51	2.88	26.6	4.37	356.0	4001.
9	1956.	149.4	155.1	1577.	2123.	20.7	6133.	4367.	402.	36380.	88.	3.02	3.04	28.4	4.64	420.3	3682.
10	1715.	152.2	160.6	1512.	1897.	18.7	5420.	4783.	358.	7036.	186.	2.95	3.22	26.4	4.81	408.3	3660.
11	2041.	183.2	115.4	1325.	1986.	27.5	6516.	4803.	375.	31864.	137.	2.90	3.42	32.5	4.83	390.9	3333.
12	1904.	161.2	123.5	1662.	1865.	22.1	6172.	4312.	368.	6089.	197.	3.41	3.10	35.0	4.10	422.3	3454.
13	1946.	148.5	120.7	1372.	2030.	17.7	6610.	4713.	322.	30820.	167.	2.83	2.79	21.4	4.43	422.9	3359.
14	1691.	152.3	183.5	1494.	2080.	21.0	5901.	4031.	355.	4862.	85.	3.79	3.25	36.8	4.54	446.9	4046.
MEAN	1915.	160.0	147.7	1531.	1989.	22.3	6097.	4452.	394.	17460.	156.	3.04	3.12	28.9	4.53	409.5	3662.

TABLE B-3. Menu Substitutions.

Original Item	Substituted Item
Cheese Omelet (TMT)	Bacon Omelet (TMT)
Broccoli and Cheese Pastry	Hamburgers on Sesame Rolls
Beef and Bacon Burrito	Beef and Bean Burrito
Haddock Dinner	Sole in Wine Sauce Dinner
Chicken Cacciatore	Chicken Casserole
Steak Burger Pot Pie	Beef Casserole

The above is a list of last minute substitutions made to the menu due to product unavailability. The substituted items were not included in the nutritional analyses. The revised menu is listed in Table 3.

APPENDIX C.

Food Management Group Instruction Manual

Sample Preparation Guide
DAY 6 DINNER

Place a checkmark in the blank next to the desired component.

Select 1	_____ Roast Beef (F.E. Warren) _____ Scallops & Shrimp Marinara w/Rice (frozen)
Select No More Than 2	_____ Mashed Potatoes (F.E. Warren) _____ Peas (F.E. Warren) _____ Corn (F.E. Warren)
Select 1	_____ Yellow Cake (F.E. Warren) _____ Ice Cream Sandwich (frozen)
As Desired	Bread Butter Beverages

I. Obtain desired items.

II. A. Prepare selected items, as follows:

ENTREE AND VEGETABLES

HEATING METHOD: Microwave

UTENSILS: Spoon

COOKWARE/SERVINGWARE: One large plastic tray (if roast beef is selected), two small trays, plastic wrap

PROCEDURE: 1) Remove F.E. Warren products from aluminum trays, place in plastic trays and cover with plastic wrap.

2) If scallops/shrimp entree is selected, the top lid should be cut along the dotted line. Do not pull back or remove lid before cooking.

3) Place entree and vegetables in oven.

a. If one vegetable is chosen, heat for 8 minutes.

b. If two vegetables are chosen, heat for 10 minutes.

4) Remove from oven and serve.

B. All other items are ready to eat.

III. Dispose of food and packaging waste as instructed in the Appendix.

IV. Follow clean-up and sanitation instructions as listed in the Appendix.

FOOD SERVICE PROCEDURES

GENERAL POLICY

- Beverages will be available at all times.
- Nonfrozen, ready-to-eat meal components may be saved as snacks.
- No smoking will be allowed in the food preparation/dining area.

OPERATIONS GUIDELINES

- Meals will be selected on the previous day.
- Meals may be consumed in the kitchen only.
- Snacks and beverages may be consumed in any room except the OCC.
- Priority in use of kitchen equipment should be granted to those on duty.

MEALS

- Meals must be consumed in the following order: breakfast, lunch, dinner.
- A meal may be skipped but the order of meals may not be changed.
- A two-hour time period is required between meals.
- Each Test Crew Member's (TCM) selected breakfast, lunch, and dinner components will be stored together in an assigned kitchen cabinet or in the refrigerator/freezer. Interchanging meal components will not be allowed, as this will alter the experimental design.
- TCMs will not be allowed to trade meal components with one another.

AFTER EACH MEAL

- Items not consumed or saved as snacks must be returned to the cabinets or refrigerator/freezer.
- All food packaging waste must be compacted separately from any other waste generated in the habitat.
- All crew members must complete a data collection form immediately following each meal.

MENU SELECTIONS

Each Test Crew Member (TCM) will receive preparation guides for all meals to be served during the test period.

A menu will be listed at the beginning of each preparation guide. The TCM should make menu selections by placing a check mark next to the desired meal components or complete meal as indicated in the examples below. No check marks will be necessary for bread, butter, or beverages.

Day 1 Dinner Menu

Select 1	_____	Tuna/Noodles (TMT)
	_____	Beef Pepper Steak (TMT)
Select No More Than 2	_____	Mashed Potatoes (instant)
	_____	Peas (canned)
	_____	Carrots (canned)
As Desired		Bread
		Butter
		Beverages

Day 3 Dinner Menu

Select 1	_____	Salisbury Steak w/Potato w/Vegetable w/Dessert (frozen)
	_____	Scallops & Shrimp Marinara w/Rice (frozen)
		Corn (F.E. Warren)
		Ice Cream Sandwich (frozen)
As Desired		Bread
		Butter
		Beverages

Selections should be made by 4 PM for the three meals offered on the next day. Once selections have been made, the preparation guides should be placed in the basket indicated during training. The selected foods will be stocked in the kitchen by the assigned TCM and the preparation guides will be returned to the basket for use on the next day.

FOOD POSITIONING

Meal selections will be made by 4 PM each day. One Test Crew Member (TCM) will be assigned the duty of positioning the selected items in the kitchen.

Each TCM will be assigned an area in the freezer section of the refrigerator/freezer for storage of selected frozen foods.

Each TCM will be assigned a kitchen cabinet and an area in the refrigerator for storage of selected nonfrozen foods.

ASSIGNED TCM:

Before positioning foods for the next day, remove any uneaten foods from the assigned cabinets and the refrigerator/freezer. Return these foods to the storage room or to the large freezer as appropriate.

Move selected frozen meal components (F.E. Warren Foilpacks, commercial dinners, ice cream bars, etc.) from the large freezer to the refrigerator/freezer.

Move selected nonfrozen meal components (IMIs, cans, boxes) from the storage room to the kitchen cabinets or to the refrigerator. The items that should be refrigerated are listed below.

Store the total test quantities for the following items in the cabinet above the induction cooktop (not in cabinets assigned to TCMs).

COLD CEREAL
HOT OATMEAL
CREAM OF WHEAT
COCOA
COFFEE
TEA
CONDIMENTS (except butter)

Store BUTTER in refrigerator.

Store BREAD in the freezer.

THAW TWO LOAVES OF BREAD EACH DAY.
Store thawed bread in a drawer (below and to the left of the sink).

Store milk, juice, and soda in the storage room. Keep refrigerator stocked daily with approximately:

20 containers of MILK (box)
1 six pack of COLA
1 six pack of DIET COLA
1 six pack of ORANGE SODA
1 six pack of GINGER ALE
3 three packs of ORANGE JUICE (box)

Move the amount selected (unless otherwise noted) from the storage room to the refrigerator:

DAY 1

PEACHES (TMT)
*ORANGE JUICE (canned), 1 six pack
BUTTERSCOTCH PUDDING

DAY 2

*PINEAPPLE JUICE (box), 2 three packs
*GRAPEFRUIT JUICE (box), 2 three packs
PEARS (TMT)
CHOCOLATE PUDDING (TMT)
APPLESAUCE
PEACHES (TMT)

DAY 3

*GRAPEFRUIT JUICE (box), 2 three packs
*ORANGE JUICE (box), 2 three packs

DAY 4

PEACHES (TMT)
PEARS (TMT)
CHOCOLATE PUDDING (TMT)

*Leftover juices may be consumed any time after breakfast.

THAW the amount selected:

DAY 3

APPLE PIE (F.E. Warren Foilpack)
CHOCOLATE CAKE (F.E. Warren Foilpack)

TEST PERIOD #1

Test # 11 Day 15 of 42 day test Date _____

Test Title: LSS Performance at Design Conditions

Operating Mode: Endurance Mode

Time	Crew Member 1	Crew Member 2	Crew Member 3	Crew Member 4
8 A.M.	Control center operator • Monitor console • Debriefing w/TE • Communication w/TE	Personal/recreation time	Personal/recreation time	Control center assistant • Corrective maintenance as required • Relieve operator as req'd. • Assure LSS under computer control* • Read & record ARG TG2-TG7* • Locate solid sorbent sampler in the gym.* • Perform equipment inspections
10 A.M.	Control center assistant • Corrective maintenance as req'd. • Relieve operator as req'd. • Read & record ARG TG-2 -TG7* • Draw ARG sample ENV 27 & arrange transfer to TE.* • Perform TOC analysis on samples from MV17, 20 23*.	Control center operator • Monitor console • Communication w/TE	Cleanup • Clean bathroom • Sweep & mop floors	Assist w/cleanup • Vacuum carpets • Dust surfaces as required
12 Noon	Personal/recreation time	Control center assistant • Corrective maintenance as req'd • Relieve operator as req'd • Read & record ARG TG2-TG7* • Read & record WWMG FT1, FT3-FT12* • Read & record WWMG TG1 PG1, and PG4 *	Control center operator • Monitor console • Communication w/TE	Exercise
2 P M	Exercise Make menu selections	Personal/recreation time Make menu selections	Control Center Assistant • Corrective maintenance as req'd. • Relieve operator as req'd • Write up detailed schedule for next day • Read & record ARG TG2- Make menu selections	Control Center Operator • Monitor console • Communication w/TE Make menu selections
4 P M.	Control center operator • Monitor console • Debriefing w/TE • Communication w/TE	Exercise	Personal/recreation time	Control center assistant • Corrective maintenance as req'd • Relieve operator as req'd • Read & record ARG TG2-TG7*
6 P M.	Control center assistant • Corrective maintenance as req'd. • Relieve operator as req'd. • Read & record ARG TG2-TG7	Control center operator • Monitor console • Communication w/TE	Exercise	Personal/recreation time
8 P.M.	Kitchen cleanup	Control center assistant • Corrective maintenance as req'd • Relieve operator as req'd. • Read & record ARG TG2-TG-7*	Control center operator • Monitor console • Communication w/TE	Personal/recreation time stock selected foods
10 P.M.	Personal/recreation time	Personal/recreation time	Control center assistant • Corrective maintenance as req'd. • Relieve operator as req'd. • Read & record ARG-TG2-TG7* • Complete daily log	Control center operator • Monitor console • Debriefing w/TE • Communication w/TE

complete data collection form after each meal

*Refer to GSS 1547, section 3.11.2.1 for details of task.

FIGURE C-1. TEST CREW MANNED TEST-SAMPLE DETAILED SCHEDULE

APPENDIX D.

Sanitation Procedures

SANITATION PROCEDURES

PRE-TEST CLEANING

1. CLEAN AND SANITIZE THE FOLLOWING:

   EQUIPMENT
   FOOD SURFACES
   UTENSILS
   SERVINGWARE
   COOKINGWARE
   DININNG BOOTH

   A. PREPARE CLEANING/SANITIZING SOLUTION
   B. USE WIPING CLOTHS
   C. DISPOSE OF WASTE WATER IN UTILITY SINK

2. GENERAL CLEANING OF ALL EQUIPMENT SURFACES (NON-FOOD CONTACT), WALLS, AND SHELVES

3. SWEEP AND MOP FLOORS

   A. PREPARE CLEANING/SANITIZING SOLUTION
   B. SWEEP FLOOR AND DISPOSE OF SOIL IN TRASH COMPACTOR
   C. MOP FLOOR
   D. DISPOSE OF WASTE WATER IN UTILITY SINK
   E. RINSE MOP IN UTILITY SINK
   F. RETURN BROOM AND MOP TO STORAGE AREA

TEST PHASE

1. EACH TEST CREW MEMBER (TCM) EACH MEAL

   A. CLEAN SPILLS AS REQUIRED
   B. DISPOSE OF FOOD WASTE
   C. DISPOSE OF PACKAGING WASTE
   D. CLEAN UTENSILS, SERVINGWARE, COOKINGWARE, AND EATINGWARE
   E. WIPE ALL SOILED EQUIPMENT AND FOOD SURFACES

2. DURING DAILY KITCHEN CLEAN-UP, ASSIGNED TCM SHOULD CLEAN

3. BACKUP SYSTEMS

   A. DISPOSABLES
   B. MANUAL WASHING

CLEANING SOLUTIONS

1. CLEANING/SANITIZING SOLUTION

   A. 3M STAINLESS STEEL CLEANER AND POLISH

   B. OPENED PRODUCT IS LOCATED BENEATH THE SINK OTHERWISE IN THE STOREROOM

   C. FIRST, WIPE SPILLS WITH A CLOTH. THEN SPRAY A LIGHT AMOUNT OF 3M CLEANER ON SURFACE. WIPE CLEAN.

2. FLOORS

   A. SPIC AND SPAN

   B. OPENED PRODUCT IS LOCATED BENEATH THE SINK OTHERWISE IN THE STOREROOM

   C. MIX ACCORDING TO PACKAGE DIRECTIONS

   D. DISPOSE OF WASTE WATER IN THE UTILITY SINK

3. GENERAL SURFACES

   A. 3M STAINLESS CLEANER AND POLISH

   B. OPENED PRODUCT IS LOCATED BENEATH THE SINK OTHERWISE IN THE STOREROOM

   C. USE DISPOSABLE TOWELS

SANITATION GUIDES

Wiping Cloths:

1. Do not use sponges on food contact surfaces.

2. Wiping cloths are stored in cleaning/sanitizing solutions.

3. General spills on food contact surfaces

   a. Use clean moist cloths to wipe spills from kitchenware, food contact surfaces of counters and equipment.

   b. Store cloths in cleaning/sanitizing solution between uses.

   c. Rinse frequently.

   d. After wringing out, place excessively soiled cloths in container provided beneath the sink.

   e. Dispose of excessively soiled cleaning/sanitizing solution in the utility sink.

   f. Mix new cleaning solution according to package directions.

4. General Cleaning

   a. A separate container of cleaning/sanitizing solution is used than that used in the cleaning of food contact surfaces.

   b. Use a clean moist cloth for general cleaning of sides of counters, dining table tops and shelves

      (1) Use a separate towel for the seats of dining booth.

   c. Store cloths in cleaning/sanitizing solution between uses. This solution is separate from that used on food contact surfaces.

   d. Rinse frequently.

   e. After wringing out, place excessively soiled cloths in container provided beneath the sink.

   f. Dispose of excessively soiled cleaning/sanitizing solution in the utility sink.

   g. Mix new cleaning solution according to package directions.

TCM ASSIGNED KITCHEN CLEAN-UP

1. General Kitchen Clean-Up

   a. Discard old and mix new container of cleaning/sanitizing solution.

   b. Dispose of used wiping cloths.

   c. Clean and sanitize the following using wiping cloths:

      (1) Food Contact Surfaces

         (a) Refrigerator shelves as necessary
         (b) All counter tops
         (c) Microwave Oven cavity (D-1
         (d) Induction cooktop (D-2)
         (e) Dining table top
         (f) Sink

      (2) Non-food Contact Surfaces

         (a) Fronts and sides of all counters and equipment
         (b) Cabinet exterior surfaces
         (c) Cabinet interior surfaces as necessary
         (d) Dining booth
         (e) Wall door surfaces as necessary

   d. Use Windex on non food-contact surfaces as necessary

   e. Sweep and mop floors

      (1) Sweep floor and dispose of soil in trash compactor
      (2) Mix mop water
      (3) Mop
      (4) Dispose of waste water in utility sink
      (5) Rinse mop in utility sink
      (6) Return broom and mop to storage area

   f. Run Dishwasher as Directed in E-1

      (1) Unload dishwasher and return items to assigned locations

   g. Compact trash according to directions

WAREWASHING INSTRUCTIONS

1. Dishwasher Instructions

   a. Each TCM is responsible for loading their own soiled servingware, eatingware, and utensils into the dishwasher.

   b. Instructions for loading and operating are attached at E-1.

   c. The dishwasher will be operated when full or during assigned kitchen clean-up.

   d. The dishwasher will be unloaded by assigned TCM during the kitchen clean-up.

2. Pots and pans will be washed manually with scouring pads provided

3. Emergency operations

   a. Disposable eating and diningware has been provided

   b. Manual warewashing

      (1) Set-up drainboard and rack
      (2) Use rubber gloves provided
      (3) Wash items in clean, hot (120 to 130 F) detergent solution
      (4) Rinse items in clean, hot (140 to 150 F) water
      (5) Place items in rack and air dry

APPENDIX E.

Data Collection Forms

ADVANCED BASE DATA COLLECTION QUESTIONNAIRE

DATA REQUIRED BY THE PRIVACY ACT OF 1974 (5 U.S.C. 552a)

AUTHORITY: Title 10 U.S. Code Selection 3012

PRINCIPLE PURPOSE: Information collected on questionnaires and in interviews will be used to evaluate the Food Management Group. Access to the information provided will be limited to authorized personnel.

ROUTINE USES: Data collected will be placed in a computerized data base and used in analyzing issues relative to the Food Management Group. Reports which include information from the questionnaires or judgments provided in post-evaluation interviews will include statistical data only. Individuals will not be identified.

MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION: Disclosure is voluntary. Refusal to disclose may result in the individual being excluded from participating in the evaluation.

PRE-TEST

Name _____ Date _____

Age _____ Height _____ Weight _____ Race _____

Male _____ Female _____ Marital Status _____

Have you ever been in the military? _____Yes _____No

If yes, what rank? _____ E1-E3 _____ E4-E6 _____ E7-E9 _____ Officer

1. Have you ever been a test subject before? _____Yes _____No

2. Have you ever worked in a food service operation?_____Yes _____No

3. Have you ever worked, or are you presently working, on the Deep Base Habitat Project? _____Yes _____No

If yes, for how long? _____

4. Have you ever spent an extended period of time (3 days or more) in an enclosed living space (for example submarine or missile bases)?

_____Yes _____No If yes, what were the circumstances and for how long did you live under those conditions?_____

_____

5. Are you presently on any kind of diet? _____Yes _____No

If yes, please explain:_____

_____

_____

6. Below are three statements about what you might expect in the Deep Base Habitat. Please rate how much you agree with each statement by circling the appropriate number on the 1 to 9 scale listed below each statement.

Strongly Disagree								Strongly Agree
1	2	3	4	5	6	7	8	9

A. Spending four days in the Habitat will be a pleasant change from my normal schedule.

1 2 3 4 5 6 7 8 9

B. I expect life in the Habitat to be boring.

1 2 3 4 5 6 7 8 9

C. Living, eating, bathing, etc. in the Habitat will not be a problem for me.

1 2 3 4 5 6 7 8 9

7. What do you expect to be most inconvenient about living in the Habitat?

_____

_____

_____

_____

8. Do you know how to operate the following equipment?

microwave oven _____Yes _____No

induction cooktop _____Yes _____No

trash compactor _____Yes _____No

garbage disposal _____Yes _____No

dishwasher _____Yes _____No

9. Circle the number of days per week you eat the following:

Breakfast	0	1	2	3	4	5	6	7
Lunch	0	1	2	3	4	5	6	7
Dinner	0	1	2	3	4	5	6	7
Snacks	0	1	2	3	4	5	6	7

10. At what time do you usually eat the following meals and snacks?

Breakfast _____ Lunch _____ Dinner _____

Snack _____ Snack _____ Snack _____

11. Circle the number of days per week you prepare the following for yourself:

Breakfast	0	1	2	3	4	5	6	7
Lunch	0	1	2	3	4	5	6	7
Dinner	0	1	2	3	4	5	6	7
Snacks	0	1	2	3	4	5	6	7

12. Which is your favorite meal? _____

13. I eat my meals at the same time every day.

Never								Always
0	1	2	3	4	5	6	7	8	9

14. List up to three foods that you LIKE and up to three foods that you eat DISLIKE or AVOID for the following food categories:

	LIKE	DISLIKE or AVOID
Meats	_____	_____
Poultry	_____	_____
Seafoods	_____	_____
Vegetables	_____	_____
Starches	_____	_____
Fruits	_____	_____
Dairy	_____	_____
Cereals/Breads	_____	_____
Desserts	_____	_____
Breakfast foods	_____	_____
Beverages	_____	_____
Other	_____	_____

15. Why did you volunteer for this study? Please explain.

_____

_____

_____

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TEST

PLEASE COMPLETE IMMEDIATELY AFTER EATING

Name: _____ _____ Date: _____

How many hours ago did you have your last meal? _____Hours

Are you on duty during this meal? _____Yes _____No

If yes, are you the control console operator or the assistant?

Meal (Please check one) _____Breakfast _____Lunch _____Dinner

1. Estimate approximately how long it took to do the following:

assemble utensils/cookware for food preparation

a) less than 5 minutes b) 5 - 10 minutes c) 11 - 15 minutes

d) 16 - 20 minutes e) more than 20 minutes

Estimate approximately how long it took to do the following:

assemble ingredients for food preparation

a) less than 5 minutes b) 5 - 10 minutes c) 11 - 15 minutes

d) 16 - 20 minutes e) more than 20 minutes

total food preparation and serving time

a) less than 5 minutes b) 5 - 10 minutes c) 11 - 15 minutes

d) 16 - 20 minutes e) more than 20 minutes

eating time

a) less than 5 minutes b) 5 - 10 minutes c) 11 - 15 minutes

d) 16 - 20 minutes e) more than 20 minutes

2. Did you have enough time to eat this meal? _____Yes _____No

If no, please explain:

_____

_____

3. Were there any delays in the meal preparation process? __Yes __No

If yes, please explain: _____

_____

_____

4. Was the combination of foods in this meal satisfactory?

_____Yes _____No If no, what are your recommendations?

_____

_____

5. **Please IDENTIFY the items of your meal by writing the specific food in the parentheses. RATE the PORTION SIZE, ACCEPTANCE, and AMOUNT CONSUMED by circling the number that best represents your opinion.**

	RATE THE PORTION SIZE	RATE THE ACCEPTANCE	RATE THE AMOUNT CONSUMED
	0 DID NOT EAT 1 EXTREMELY SMALL 2 VERY SMALL 3 MODERATELY SMALL 4 SOMEWHAT SMALL 5 JUST RIGHT 6 SOMEWHAT LARGE 7 MODERATELY LARGE 8 VERY LARGE 9 EXTREMELY LARGE	0 DID NOT EAT 1 DISLIKE EXTREMELY 2 DISLIKE VERY MUCH 3 DISLIKE MODERATELY 4 DISLIKE SOMEWHAT 5 NEITHER LIKE NOR DISLIKE 6 LIKE SOMEWHAT 7 LIKE MODERATELY 8 LIKE VERY MUCH 9 LIKE EXTREMELY	A NONE B 1 - 25% C 26 - 50% D 51 - 75% E 76 - 99% F ALL
ENTREE (_____)	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	A B C D E F
VEGETABLE (_____)	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	A B C D E F
STARCH (_____)	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	A B C D E F
FRUIT (_____)	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	A B C D E F
BREAD/CEREAL (_____)	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	A B C D E F
DESSERT (_____)	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	A B C D E F
BEVERAGE (_____)	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	A B C D E F
OTHER (_____)	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	A B C D E F

COMPLETE AFTER CLEANING-UP

6. Did you have difficulty discarding the food waste portion of your meal? _____Yes _____No

If yes, please explain: _____

_____

7. Did you have difficulty disposing of the packaging waste portion of your meal? _____Yes _____No

If yes, please explain: _____

_____

8. Did you have difficulty cleaning up the meal service, preparation utensils and equipment? _____Yes _____No

If yes, please explain: _____

_____

9. How long did it take you to clean up after your meal?

a) less than 5 minutes b) 5 - 10 minutes c) 11 - 15 minutes

d) 16 - 20 minutes e) more than 20 minutes

10. What items did you save as snacks? _____

_____

_____

11. What snacks did you eat between your last meal and this meal?

_____

How long ago and how much of each did you consume? _____

_____

_____

12. What beverages did you consume between your last meal and this meal?

BEVERAGE	QUANTITY
Water	_____
Juice	_____
Soda	_____
Coffee	_____
Tea	_____
Decaf	_____
Other(_____)	_____

13. What are your recommendations for improving and streamlining the meal preparation and clean-up procedures? _____

_____

_____

_____

_____

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POST-TEST

Name _____ Date _____

1. Please rate the following features of the Habitat and the food service using the 1 - 9 scale listed below. Circle the number that best represents your opinion.

	DISLIKE EXTREMELY 1	2	3	4	NEITHER LIKE NOR DISLIKE 5	6	7	8	LIKE EXTREMELY 9
Atmosphere	1	2	3	4	5	6	7	8	9
General appearance of the food prep. area	1	2	3	4	5	6	7	8	9

DISLIKE EXTREMELY				NEITHER LIKE NOR DISLIKE				LIKE EXTREMELY
1	2	3	4	5	6	7	8	9

Please rate the following general features for the FROZEN FOOD items:

Food Quality	1	2	3	4	5	6	7	8	9
Portion Size	1	2	3	4	5	6	7	8	9
Food Appearance	1	2	3	4	5	6	7	8	9
Flavor	1	2	3	4	5	6	7	8	9
Variety	1	2	3	4	5	6	7	8	9
Selective Menu Choice	1	2	3	4	5	6	7	8	9
Non-Selective Menu Choice	1	2	3	4	5	6	7	8	9

Please rate the following general features for the Non-FROZEN FOOD items:

Food Quality	1	2	3	4	5	6	7	8	9
Portion Size	1	2	3	4	5	6	7	8	9
Food Appearance	1	2	3	4	5	6	7	8	9
Flavor	1	2	3	4	5	6	7	8	9
Variety	1	2	3	4	5	6	7	8	9
Selective Menu Choice	1	2	3	4	5	6	7	8	9
Non-Selective Menu Choice	1	2	3	4	5	6	7	8	9

2. **Were you able to heat your food adequately the first time?**

_____ Yes _____ No If no, please explain: _____

_____

_____

3. Please rate how easy the following equipment was to USE by circling the appropriate number on the 1 to 9 scale below each item.

	Extremely Easy 1	2	3	4	5	6	7	8	Extremely Difficult 9
Microwave oven	1	2	3	4	5	6	7	8	9
Induction cooktop	1	2	3	4	5	6	7	8	9
Sink	1	2	3	4	5	6	7	8	9
Refrigerator	1	2	3	4	5	6	7	8	9
Freezer	1	2	3	4	5	6	7	8	9
Toaster	1	2	3	4	5	6	7	8	9
Dishwasher	1	2	3	4	5	6	7	8	9
Trash Compactor	1	2	3	4	5	6	7	8	9
Garbage Disposal	1	2	3	4	5	6	7	8	9

4. Please rate how easy the following equipment was to CLEAN UP by circling the appropriate number on the 1 to 9 scale below each item.

	Extremely Easy 1	2	3	4	5	6	7	8	Extremely Difficult 9
Microwave oven	1	2	3	4	5	6	7	8	9
Induction cooktop	1	2	3	4	5	6	7	8	9
Sink	1	2	3	4	5	6	7	8	9
Refrigerator	1	2	3	4	5	6	7	8	9
Freezer	1	2	3	4	5	6	7	8	9
Toaster	1	2	3	4	5	6	7	8	9
Dishwasher	1	2	3	4	5	6	7	8	9
Trash Compactor	1	2	3	4	5	6	7	8	9
Garbage Disposal	1	2	3	4	5	6	7	8	9
Floors	1	2	3	4	5	6	7	8	9
Counters	1	2	3	4	5	6	7	8	9
Table	1	2	3	4	5	6	7	8	9

5. Was your meal stored in a convenient place? _____Yes _____No

If no, please explain: _____

_____

_____

6. What cooking utensils did you use to prepare your meal?

manual can opener	_____	paring knife	_____
plastic cutting board	_____	funnels	_____
measuring spoons	_____	clear, measuring cups	_____
clear, mixing pan	_____	hot pads	_____
plastic pitcher	_____	rubber spatula	_____
metal spatula	_____	solid spoon	_____
slotted spoon	_____	kitchen shears	_____
plastic strainer	_____	thermometer	_____
tongs	_____	timer	_____
1 1/2 quart pot	_____	12 quart pot	_____
3 quart pot	_____	2 quart Kettle	_____
plastic wrap	_____		

7. Were these utensils easy to use? _____Yes _____No

If no, please explain: _____

_____

_____

8. How would you improve the utensils or their location for preparing this meal?

_____

_____

9. Were the preparation instructions adequate? _____Yes _____No

If no, please explain: _____

_____

10. If changes were to be made to the foods that you ate during this test, what characteristic of foods would you most want to see changed? Please rank the following changes by placing a "1" next to the most important change, a "2" next to the second most important, etc.

For the FROZEN FOODS		For the NON-FROZEN FOODS	
Characteristic	Rank	Characteristic	Rank
Taste better	____	Taste better	____
Easier to prepare	____	Easier to prepare	____
More variety	____	More variety	____
Larger portion size	____	Larger portion size	____
Other (_____)	____	Other (_____)	____

11. What percent of the time did you encounter the following:

insects

a) never b) 0 - 10% c) 10 - 25% d) 25 - 50% e) 50 - 75%

f) 75 - 100% g) always

dirty serving counter

a) never b) 0 - 10% c) 10 - 25% d) 25 - 50% e) 50 - 75%

f) 75 - 100% g) always

dirty dishes

a) never b) 0 - 10% c) 10 - 25% d) 25 - 50% e) 50 - 75%

f) 75 - 100% g) always

dirty glasses

a) never b) 0 - 10% c) 10 - 25% d) 25 - 50% e) 50 - 75%

f) 75 - 100% g) always

(What percent of the time did you encounter the following:)

dirty utensils

a) never b) 0 - 10% c) 10 - 25% d) 25 - 50% e) 50 - 75%

f) 75 - 100% g) always

dirty pots

a) never b) 0 - 10% c) 10 - 25% d) 25 - 50% e) 50 - 75%

f) 75 - 100% g) always

dirty floors

a) never b) 0 - 10% c) 10 - 25% d) 25 - 50% e) 50 - 75%

f) 75 - 100% g) always

dirty table

a) never b) 0 - 10% c) 10 - 25% d) 25 - 50% e) 50 - 75%

f) 75 - 100% g) always

out of condiments

a) never b) 0 - 10% c) 10 - 25% d) 25 - 50% e) 50 - 75%

f) 75 - 100% g) always

12. What are your recommendations for improving or streamlining the operation of the food service system? (consider storage, preparation, eating, additional foods, clean-up, etc)

_____

_____

_____

_____

_____

13. Do you feel that there were any unpleasant psychological effects of living in the Habitat? _____Yes _____No
If yes, please explain:

_____

_____

_____

14. Do you feel that the food you ate in the Habitat affected your overall performance in any way? _____Yes _____No
If yes, please explain:

15. Did any other aspect of the Habitat (temperature, crowding, atmosphere, etc.) affect your overall performance? _____Yes _____No
If yes, please explain:

16. Please list any additional comments that you have about the food service operation for the Habitat.